PSC REF#:446841

Public Service Commission of Wisconsin
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Wisconsin Public Service Corporation
Exhibit 1 Schedules

Schedule	Description
1	WPSC Test Year Capital Structure and OBS Rebalancing
2	WPSC Test Year WACC Sensitivity Summary
3	WPSC Test Year Capital Structure and WACC Sensitivity Analysis
4	Short-Term Debt Market Data
5	U.S. Treasury Bond Yields and Yield Spreads vs. Utility Bonds
6	Forecasted Interest Rates on Short and Long-Term Debt
7	Historical and Forecasted Inflation Rates
8	Discounted Cash Flow (DCF) Analysis
9	Wisconsin and National Utility Returns on Equity Authorized
10	Interest Rate Premium Analysis
11	Debt Rating Yield Curve
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Public Service Commission of Wisconsin

Wisconsin Public Service Corporation

Average Capital Structure
Test Year Ending December 31, 2023

Financial Basis	($)	Percent
	(000's)	
Common Stock Equity	2,490,484	53.00
Adjustment	(36,400)	
Preferred Stock	0	0.00
Long-Term Debt	2,100,000	45.35
Short-Term Debt	21,136	0.46
Capitalized Leases & PPAs	55,127	1.19
Total Capital	4,630,347	100.00

Regulatory Basis		Percent
Common Stock Equity	2,490,484	
Less: Nonutility Property	(250)	
Less: Goodwill	(36,400)	
Less: Key Man Life Insurance	(23,219)	
Adjusted Common Stock Equity	2,430,615	53.40
Preferred Stock	0	0.00
Long-Term Debt	2,100,000	46.14
Short-Term Debt	21,136	0.46
Total Utility Capital	4,551,751	100.00

Cost of Rebalancing WPSC's Capitalization for Off-Balance Sheet Debt Equivalents

1	Debt Equivalent	$1,000,000
2	Equity to rebalance to 53.00% equity (Line 1 x 53.00%)	$530,000
	Incremental Cost to Ratepayers	
3	At cost of long-term debt estimate of 4.00% and ROE of 9.80%	$50,186.34
4	At cost of short-term debt estimate of 5.34% and ROE of 9.80%	$43,084.34

Wisconsin Public Service Corporation
Weighted Average Cost of Capital (WACC) Calculation
9.60 | 9.80 | 10.00 | Percent Return on Common Equity

	Regulatory Capital Structure Component	Amount (000's)	Percentage of Capital Structure	Annual Cost Rate with 9.60% Return on Common	Weighted Cost	Annual Cost Rate with 9.80% Return on Common	Weighted Cost	Annual Cost Rate with 10.00% Return on Common	Weighted Cost
(A)	Common Stockholders' Equity	$2,490,484							
	Less: Nonutility Property	(250)							
	Less: Goodwill	(36,400)							
	Less: Key Man Life Insurance	(23,219)							
	Adjusted Common Stockholders' Equity	2,430,615	53.40%	9.60%	5.13%	9.80%	5.23%	10.00%	5.34%
(B)	Preferred Stock Equity	-	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(C)	Long Term Debt	2,100,000	46.14%	4.00%	1.84%	4.00%	1.84%	4.00%	1.84%
(D)	Short-Term Debt	21,136	0.46%	5.34%	0.02%	5.34%	0.02%	5.34%	0.02%
(E)	Total Capital | Weighted Average Cost of Capital	$4,551,751	100.00%		**6.99%**		**7.09%**		**7.20%**
(F)	Income Taxes on Equity Capital				1.92%		1.96%		2.00%
(G)	Ratepayer | Economic Cost of Capital				**8.91%**		**9.05%**		**9.20%**
	Interest Coverage								
	Before Tax Coverage								
(H)	Line (G) / Lines (C) + (D) + (E)				4.79x		4.87x		4.95x
	After Tax Coverage								
(I)	Line (E) / Lines (C) + (D)				3.76x		3.81x		3.87x

Wisconsin Public Service Corporation
Capital Structure and Cost of Capital Sensitivity Analysis
Electric Operations
Test Year Ending December 31, 2023

CoC Revenue Requirement Impact - Electric Operations 2023		
Lower ROE *(Equity 53.00%;* ***ROE 9.40%*** *)*	$	(15,054)
Lower ROE *(Equity 53.00%;* ***ROE 9.60%)***	$	(10,036)
Staff Recommended *(Equity 53.00%; ROE 9.80%)*	$	(5,018)
Higher ROE *(Equity 53.00%;* ***ROE 10.00%*** *)*	$	-
Lower Equity Layer; Lower ROE ***(Equity 52.50%*** *;* ***ROE 9.60%*** *)*	$	(17,636)
Lower Equity Layer ***(Equity 52.00%;*** *ROE 9.80%* ***)***	$	(7,791)
Lower Equity Layer ***(Equity 52.50%*** *; ROE 9.80%)*	$	(6,405)
Higher Equity Layer ***(Equity 53.00%*** *; ROE 9.80%)*	$	(3,631)

	Current 6690-UR-126	Application 6690-UR-127	Staff 6690-UR-127	Capital Structure Sensitivity					ROE Sensitivity					Capital Structure & ROE Sensitivity				
Financial Capital Structure (%)																		
Common Stock Equity	52.50%	53.00%	53.00%	52.00%	52.50%	53.00%	53.50%	54.00%	53.00%	53.00%	53.00%	53.00%	53.00%	52.00%	52.50%	53.00%	53.50%	54.00%
Preferred Stock	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	40.49%	45.35%	45.35%	46.35%	45.85%	45.35%	44.85%	44.35%	45.35%	45.35%	45.35%	45.35%	45.35%	46.35%	45.85%	45.35%	44.85%	44.35%
Short-Term Debt	2.67%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%
Capitalized Leases & PPAs	3.91%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%
Financial Capital Structure	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RateMaking Capital Structure (%)																		
Adjusted Common Stock Equity	54.56%	53.40%	53.40%	52.38%	52.89%	53.40%	53.91%	54.42%	53.40%	53.40%	53.40%	53.40%	53.40%	52.38%	52.89%	53.40%	53.91%	54.42%
Preferred Stock	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	42.21%	46.14%	46.14%	47.15%	46.64%	46.14%	45.63%	45.12%	46.14%	46.14%	46.14%	46.14%	46.14%	47.15%	46.64%	46.14%	45.63%	45.12%
Short-Term Debt	2.78%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%
RateMaking Capital Structure	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost Rates (%)																		
Common Stock Equity	10.00%	10.00%	9.80%	9.80%	9.80%	9.80%	9.80%	9.80%	9.40%	9.60%	9.80%	10.00%	10.20%	9.40%	9.60%	9.80%	10.00%	10.20%
Preferred Stock	3.95%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	4.60%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Short-Term Debt	2.80%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%
Weighted Cost Rates (%)																		
Common Stock Equity	5.46%	5.34%	5.23%	5.13%	5.18%	5.23%	5.28%	5.33%	5.02%	5.13%	5.23%	5.34%	5.45%	4.92%	5.08%	5.23%	5.39%	5.55%
Preferred Stock	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	1.94%	1.84%	1.84%	1.89%	1.86%	1.84%	1.82%	1.80%	1.84%	1.84%	1.84%	1.84%	1.84%	1.89%	1.86%	1.84%	1.82%	1.80%
Short-Term Debt	0.08%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
RateMaking WACC	7.49%	7.21%	7.09%	7.04%	7.07%	7.10%	7.13%	7.16%	6.89%	7.00%	7.10%	7.21%	7.32%	6.83%	6.97%	7.10%	7.24%	7.38%
Tax Factor																		
Whole	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
- State rate	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%
	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%
X Fed rate	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%
Effective	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%
+ State rate	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%
Composite	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%
Tax factor (divide):	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%
Gross up factor = [1 / (1-composite)]	137.44%	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744
Income Taxes on Equity Components	2.05%	2.00%	1.96%	1.92%	1.94%	1.96%	1.98%	2.00%	1.88%	1.92%	1.96%	2.00%	2.04%	1.84%	1.90%	1.96%	2.02%	2.08%
Customer or Economic Cost of Capital	9.54%	9.21%	9.05%	8.97%	9.01%	9.06%	9.11%	9.16%	8.77%	8.91%	9.06%	9.21%	9.36%	8.68%	8.87%	9.06%	9.26%	9.46%
Required Rate of Return																		
RateMaking WACC	7.49%	7.21%	7.09%	7.04%	7.07%	7.10%	7.13%	7.16%	6.89%	7.00%	7.10%	7.21%	7.32%	6.83%	6.97%	7.10%	7.24%	7.38%
Ratio NIRB plus CWIP to Capital	86.38%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%
Adj. CoC to Derive % Req Return on NIRB (AFUDC rate)	8.68%	7.52%	7.39%	7.34%	7.37%	7.40%	7.43%	7.47%	7.18%	7.29%	7.40%	7.52%	7.63%	7.12%	7.26%	7.40%	7.55%	7.69%
Total Average CWIP Balances ($000)	$124,545	$173,389	$173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389	173,389
Percent of CWIP Receiving Current Return	31.84%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%	15.21%
Amount of CWIP Receiving Current Return ($000)	$39,655	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372	$26,372
Current Earnings on CWIP Receiving Current Return on Adjusted CoC	$3,440	$1,982	$1,949	$1,936	$1,944	$1,953	$1,961	$1,969	$1,894	$1,923	$1,953	$1,982	$2,011	$1,879	$1,915	$1,953	$1,990	$2,029
Average NIRB (WPSC Electric Total)	$4,818,391	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620	$3,423,620
Adjustment to Req Return to Provide a Return on CWIP	0.07%	0.06%	0.06%	0.06%	0.06%	0.0570%	0.06%	0.06%	0.06%	0.06%	0.06%	0.06%	0.06%	0.05%	0.06%	0.06%	0.06%	0.06%
Earnings on Reg Items at specified rate	$6,648	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)	($1)
Regulatory items at specified rate	0.14%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Allowance for Corporate Expenses	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Adjusted Return Requirement on NIRB	8.88%	7.57%	7.45%	7.40%	7.43%	7.46%	7.49%	7.52%	7.24%	7.35%	7.46%	7.57%	7.69%	7.18%	7.32%	7.46%	7.61%	7.75%
Revenue Deficiency Calculation																		
Average NIRB (WI Retail)	4,738,613	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477	3,254,477
Test Year Operating Income	397,194	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206	198,206
Rate of Return to be Earned (%)	8.38%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%	6.09%
Rate of Return Required ($)	421,002	246,460	242,384	240,791	241,800	242,809	243,818	244,827	235,507	239,158	242,809	246,460	250,111	233,628	238,184	242,809	247,504	252,268
Rate of Return Required (%)	8.88%	7.57%	7.45%	7.40%	7.43%	7.46%	7.49%	7.52%	7.24%	7.35%	7.46%	7.57%	7.69%	7.18%	7.32%	7.46%	7.61%	7.75%
Earnings Deficiency ($)	23,808	48,254	44,178	42,585	43,594	44,603	45,612	46,621	37,301	40,952	44,603	48,254	51,905	35,422	39,978	44,603	49,298	54,062
Gross up Factor	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744
Revenue Deficiency with utility proposed tax credits	32,722	66,320	60,718	58,529	59,915	61,302	62,689	64,075	51,266	56,284	61,302	66,320	71,338	48,684	54,945	61,302	67,755	74,303
Adjusted Revenue Deficiency	32,722	66,320	60,718	58,529	59,915	61,302	62,689	64,075	51,266	56,284	61,302	66,320	71,338	48,684	54,945	61,302	67,755	74,303
Restore Fuel Blend at ERGS to 80/20	5,931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Settlement Adjustment (Ex.-WEPCO WG-Zgonc-4 Schedule 6)	(1,200)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue Deficiency after Adjustments and Bill Credit	**$37,452**	**$66,320**	**$60,718**	**$58,529**	**$59,915**	**$61,302**	**$62,689**	**$64,075**	**$51,266**	**$56,284**	**$61,302**	**$66,320**	**$71,338**	**$48,684**	**$54,945**	**$61,302**	**$67,755**	**$74,303**
				7,791	6,405	5,018	3,631	2,245	15,054	10,036	5,018	0	(5,018)	17,636	11,375	5,018	(1,434)	(7,983)
Revenue at Existing Rates	$2,853,265	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843	$1,122,843
Percent Increase / (Decrease)	1.3%	5.9%	5.4%	5.2%	5.3%	5.5%	5.6%	5.7%	4.6%	5.0%	5.5%	5.9%	6.4%	4.3%	4.9%	5.5%	6.0%	6.6%

Wisconsin Public Service Corporation
Capital Structure and Cost of Capital Sensitivity Analysis
Gas Operations
Test Year Ending December 31, 2023

CoC Revenue Requirement Impact - Gas Operations 2023		
Lower ROE *(Equity 53.00%; **ROE 9.40%**)*	$	(3,589)
Lower ROE *(Equity 53.00%; **ROE 9.60%**)*	$	(2,393)
Staff Recommended *(Equity 53.00%; ROE 9.80%)*	$	(1,196)
Higher ROE *(Equity 53.00%; **ROE 10.00%**)*	$	-
Lower Equity Layer; Lower ROE *(**Equity 52.50%** ; **ROE 9.60%**)*	$	(2,712)
Lower Equity Layer *(**Equity 52.00%**; ROE 9.80%)*	$	(1,857)
Lower Equity Layer *(**Equity 52.50%** ; ROE 9.80%)*	$	(1,527)
Higher Equity Layer *(**Equity 53.00%** ; ROE 9.80%)*	$	(866)

	Current 6690-UR-126	Application 6690-UR-127	Staff 6690-UR-127	Capital Structure Sensitivity					ROE Sensitivity					Capital Structure & ROE Sensitivity				
Financial Capital Structure (%)																		
Adjusted Common Stock Equity	52.50%	53.00%	53.00%	52.00%	52.50%	53.00%	53.50%	54.00%	53.00%	53.00%	53.00%	53.00%	53.00%	52.00%	52.50%	53.00%	53.50%	54.00%
Preferred Stock	0.43%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	40.49%	45.35%	45.35%	46.35%	45.85%	45.35%	44.85%	44.35%	45.35%	45.35%	45.35%	45.35%	45.35%	46.35%	45.85%	45.35%	44.85%	44.35%
Short-Term Debt	2.67%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%
Capitalized Leases & PPAs	3.91%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%	1.19%
Financial Capital Structure	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
RateMaking Capital Structure (%)																		
Adjusted Common Stock Equity	54.56%	53.40%	53.40%	52.38%	52.89%	53.40%	53.91%	54.42%	53.40%	53.40%	53.40%	53.40%	53.40%	52.38%	52.89%	53.40%	53.91%	54.42%
Preferred Stock	0.45%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	42.21%	46.14%	46.14%	47.15%	46.64%	46.14%	45.63%	45.12%	46.14%	46.14%	46.14%	46.14%	46.14%	47.15%	46.64%	46.14%	45.63%	45.12%
Short-Term Debt	2.78%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%	0.46%
RateMaking Capital Structure	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cost Rates (%)																		
Common Stock Equity	10.00%	10.00%	9.80%	9.80%	9.80%	9.80%	9.80%	9.80%	9.40%	9.60%	9.80%	10.00%	10.20%	9.40%	9.60%	9.80%	10.00%	10.20%
Preferred Stock	3.95%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	4.60%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Short-Term Debt	2.80%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%	5.34%
Weighted Cost Rates (%)																		
Common Stock Equity	5.46%	5.34%	5.23%	5.13%	5.18%	5.23%	5.28%	5.33%	5.02%	5.13%	5.23%	5.34%	5.45%	4.92%	5.08%	5.23%	5.39%	5.55%
Preferred Stock	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	1.94%	1.85%	1.84%	1.89%	1.87%	1.85%	1.83%	1.80%	1.85%	1.85%	1.85%	1.85%	1.85%	1.89%	1.87%	1.85%	1.83%	1.80%
Short-Term Debt	0.08%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
RateMaking WACC	7.49%	7.21%	7.09%	7.04%	7.07%	7.10%	7.13%	7.16%	6.89%	7.00%	7.10%	7.21%	7.32%	6.83%	6.97%	7.10%	7.24%	7.38%
Tax Factor																		
Whole	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
- State rate	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%
	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%	92.10%
X Fed rate	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%	21.00%
Effective	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%	19.34%
+ State rate	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%	7.90%
Composite	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%	27.24%
Tax factor (divide):	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%	72.76%
Gross up factor = [1 / (1-composite)]	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744
Income Taxes on Equity Components	2.05%	2.00%	1.96%	1.92%	1.94%	1.96%	1.98%	2.00%	1.88%	1.92%	1.96%	2.00%	2.04%	1.84%	1.90%	1.96%	2.02%	2.08%
Customer or Economic Cost of Capital	9.54%	9.21%	9.05%	8.97%	9.01%	9.06%	9.11%	9.16%	8.77%	8.92%	9.06%	9.21%	9.36%	8.68%	8.87%	9.06%	9.26%	9.46%
Required Rate of Return																		
RateMaking WACC	7.49%	7.21%	7.09%	7.04%	7.07%	7.10%	7.13%	7.16%	6.89%	7.00%	7.10%	7.21%	7.32%	6.83%	6.97%	7.10%	7.24%	7.38%
Ratio NIRB plus CWIP to Capital	86.38%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%	95.93%
Adj. CoC to Derive % Req Return on NIRB (AFUDC rate)	8.68%	7.52%	7.39%	7.34%	7.37%	7.40%	7.44%	7.47%	7.18%	7.29%	7.40%	7.52%	7.63%	7.12%	7.26%	7.40%	7.55%	7.69%
Total Average CWIP Balances ($000)	$67,668	$17,218	$17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218	17,218
Percent of CWIP Receiving Current Return	2.74%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
Amount of CWIP Receiving Current Return ($000)	$1,853	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609	$8,609
Current Earnings on CWIP Receiving Current Return on Adjusted CoC	$161	$647	$636	$632	$635	$637	$640	$643	$618	$628	$637	$647	$657	$613	$625	$637	$650	$662
Average NIRB	$722,392	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219	$773,219
Adjustment to Req Return to Provide a Return on CWIP	0.02%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.09%
Earnings on Reg Items at specified rate	0.0000%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Regulatory items at specified rate	0.0000%	0.00%	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Allowance for Corporate Expenses	0.0000%	0.00%	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Adjusted Return Requirement on NIRB	8.70%	7.60%	7.47%	7.43%	7.46%	7.49%	7.52%	7.55%	7.26%	7.37%	7.49%	7.60%	7.71%	7.20%	7.34%	7.49%	7.63%	7.78%
Revenue Deficiency Calculation																		
Average NIRB (WI Retail)	722,392	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219	773,219
Test Year Operating Income	56,077	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225	37,225
Rate of Return to be Earned (%)	7.76%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%	4.81%
Rate of Return Required ($)	62,829	58,763	57,783	57,412	57,652	57,893	58,133	58,373	56,152	57,022	57,893	58,763	59,633	55,704	56,790	57,893	59,012	60,147
Rate of Return Required (%)	8.6974%	7.60%	7.47%	7.43%	7.46%	7.49%	7.52%	7.55%	7.26%	7.37%	7.49%	7.60%	7.71%	7.20%	7.34%	7.49%	7.63%	7.78%
Earnings Deficiency ($)	6,753	21,538	20,558	20,187	20,427	20,668	20,908	21,148	18,927	19,797	20,668	21,538	22,408	18,479	19,565	20,668	21,787	22,922
Gross up Factor	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744	1.3744
Revenue Deficiency with utility proposed tax credits	9,281	29,602	28,255	27,745	28,075	28,406	28,736	29,066	26,013	27,209	28,406	29,602	30,798	25,398	26,890	28,406	29,944	31,505
Remove TCJA Bill Credit/Surcharge		5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271	5,271
Remove TCJA Unprotected EDIT Impact		(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)	(5,271)
Remove WE Gas Bluewater Escrow balance flowback	1,150	0																
Revenue Deficiency	**$10,431**	**$29,602**	**$28,255**	**$27,745**	**$28,075**	**$28,406**	**$28,736**	**$29,066**	**$26,013**	**$27,209**	**$28,406**	**$29,602**	**$30,798**	**$25,398**	**$26,890**	**$28,406**	**$29,944**	**$31,505**
				1,857	1,527	1,196	866	535	3,589	2,393	1,196	0	(1,196)	4,204	2,712	1,196	(342)	(1,903)
Revenue at Existing Rates	$378,121	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897	$365,897
Percent Increase / (Decrease)	2.8%	8.1%	7.7%	7.6%	7.7%	7.8%	7.9%	7.9%	7.1%	7.4%	7.8%	8.1%	8.4%	6.9%	7.3%	7.8%	8.2%	8.6%

Short-term Debt Market Data
(Percent)

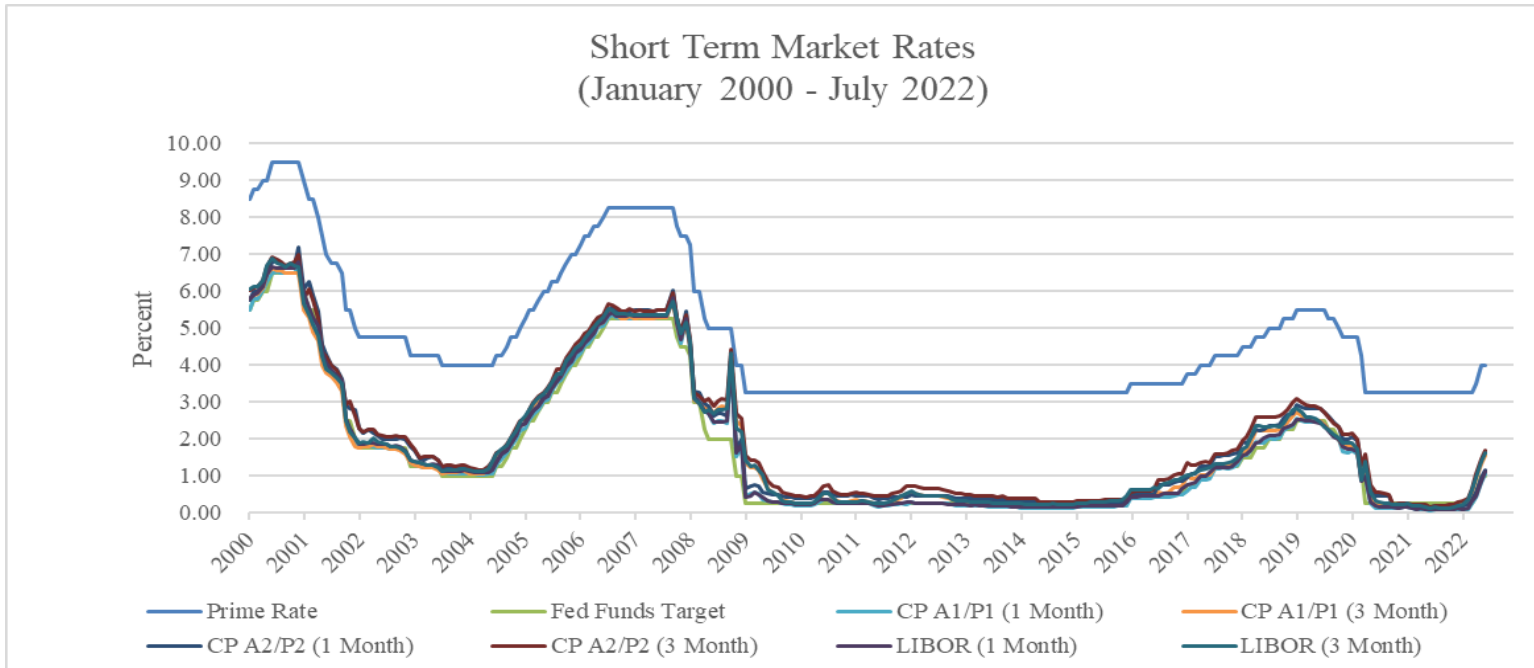
			Commerical Paper				SOFR/LIBOR	
	Prime Rate	Fed Funds Target	A1/P1 1 Month	A1/P1 3 Month	A2/P2 1 Month	A2/P2 3 Month	1 Month	3 Month
2013								
January	3.25	0.25	0.20	0.28	0.40	0.48	0.21	0.31
February	3.25	0.25	0.19	0.29	0.39	0.49	0.20	0.30
March	3.25	0.25	0.19	0.26	0.39	0.46	0.20	0.28
April	3.25	0.25	0.19	0.25	0.39	0.45	0.20	0.28
May	3.25	0.25	0.19	0.25	0.39	0.45	0.20	0.28
June	3.25	0.25	0.16	0.24	0.36	0.44	0.19	0.28
July	3.25	0.25	0.16	0.24	0.36	0.44	0.19	0.27
August	3.25	0.25	0.16	0.23	0.36	0.43	0.19	0.27
September	3.25	0.25	0.15	0.24	0.35	0.44	0.18	0.26
October	3.25	0.25	0.16	0.20	0.36	0.40	0.17	0.24
November	3.25	0.25	0.15	0.20	0.35	0.40	0.17	0.24
December	3.25	0.25	0.14	0.20	0.34	0.40	0.17	0.24
2014								
January	3.25	0.25	0.13	0.20	0.33	0.40	0.16	0.24
February	3.25	0.25	0.13	0.20	0.33	0.40	0.16	0.23
March	3.25	0.25	0.13	0.20	0.33	0.40	0.16	0.24
April	3.25	0.25	0.13	0.20	0.33	0.40	0.15	0.23
May	3.25	0.25	0.13	0.19	0.23	0.29	0.15	0.22
June	3.25	0.25	0.13	0.19	0.23	0.29	0.15	0.23
July	3.25	0.25	0.13	0.19	0.23	0.29	0.15	0.23
August	3.25	0.25	0.13	0.19	0.23	0.29	0.16	0.24
September	3.25	0.25	0.13	0.19	0.23	0.29	0.15	0.23
October	3.25	0.25	0.13	0.19	0.23	0.29	0.15	0.23
November	3.25	0.25	0.13	0.19	0.23	0.29	0.16	0.23
December	3.25	0.25	0.13	0.19	0.23	0.29	0.16	0.24
2015								
January	3.25	0.25	0.15	0.21	0.25	0.31	0.17	0.26
February	3.25	0.25	0.15	0.21	0.25	0.31	0.17	0.26
March	3.25	0.25	0.15	0.21	0.25	0.31	0.18	0.26
April	3.25	0.25	0.15	0.21	0.25	0.31	0.18	0.27
May	3.25	0.25	0.15	0.21	0.25	0.31	0.18	0.28
June	3.25	0.25	0.15	0.21	0.25	0.31	0.18	0.28
July	3.25	0.25	0.17	0.24	0.27	0.34	0.19	0.28
August	3.25	0.25	0.17	0.24	0.27	0.34	0.19	0.31
September	3.25	0.25	0.17	0.24	0.27	0.34	0.20	0.33
October	3.25	0.25	0.18	0.26	0.28	0.36	0.19	0.33
November	3.25	0.25	0.18	0.26	0.28	0.36	0.19	0.34
December	3.25	0.25	0.19	0.33	0.29	0.43	0.28	0.46
2016								
January	3.50	0.50	0.38	0.45	0.48	0.55	0.43	0.61
February	3.50	0.50	0.40	0.48	0.50	0.58	0.43	0.62
March	3.50	0.50	0.40	0.48	0.50	0.58	0.44	0.63
April	3.50	0.50	0.40	0.48	0.50	0.58	0.44	0.63
May	3.50	0.50	0.40	0.48	0.50	0.58	0.44	0.63
June	3.50	0.50	0.41	0.55	0.51	0.65	0.46	0.68
July	3.50	0.50	0.41	0.55	0.76	0.90	0.47	0.65
August	3.50	0.50	0.41	0.53	0.76	0.88	0.50	0.79
September	3.50	0.50	0.41	0.56	0.76	0.91	0.53	0.84
October	3.50	0.50	0.47	0.68	0.82	1.03	0.53	0.88
November	3.50	0.50	0.50	0.70	0.85	1.05	0.54	0.88
December	3.50	0.50	0.50	0.72	0.85	1.07	0.65	0.95
2017								
January	3.75	0.75	0.60	1.00	0.95	1.35	0.76	1.01
February	3.75	0.75	0.69	0.92	1.04	1.27	0.78	1.03
March	3.75	0.75	0.69	0.92	1.04	1.27	0.83	1.10
April	4.00	1.00	0.89	1.01	1.24	1.36	0.99	1.16
May	4.00	1.00	0.90	1.02	1.25	1.37	0.99	1.18
June	4.00	1.00	0.91	1.01	1.26	1.36	1.09	1.22
July	4.25	1.25	1.18	1.23	1.53	1.58	1.23	1.31
August	4.25	1.25	1.18	1.23	1.53	1.58	1.23	1.31
September	4.25	1.25	1.21	1.25	1.56	1.60	1.23	1.32

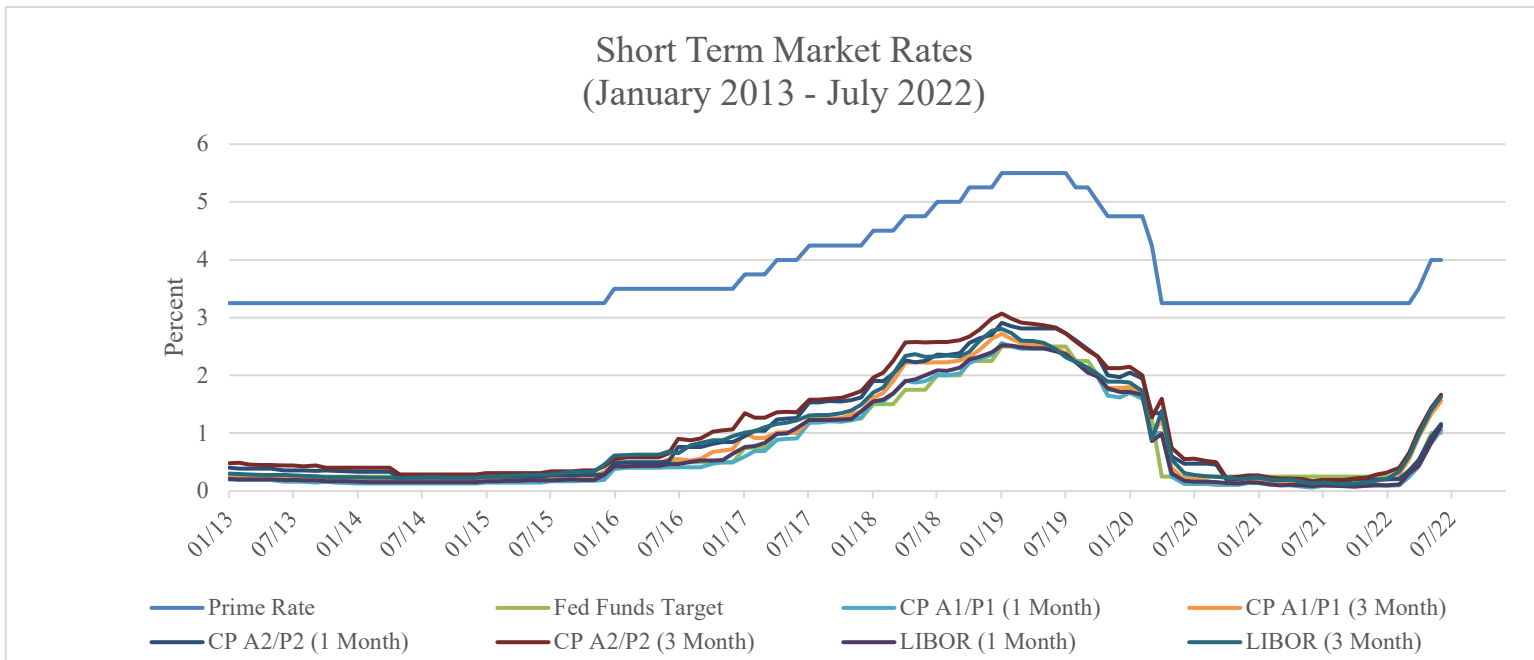
October	4.25	1.25	1.20	1.26	1.55	1.61	1.24	1.35
November	4.25	1.25	1.22	1.32	1.57	1.67	1.24	1.39
December	4.25	1.25	1.27	1.38	1.62	1.73	1.38	1.49

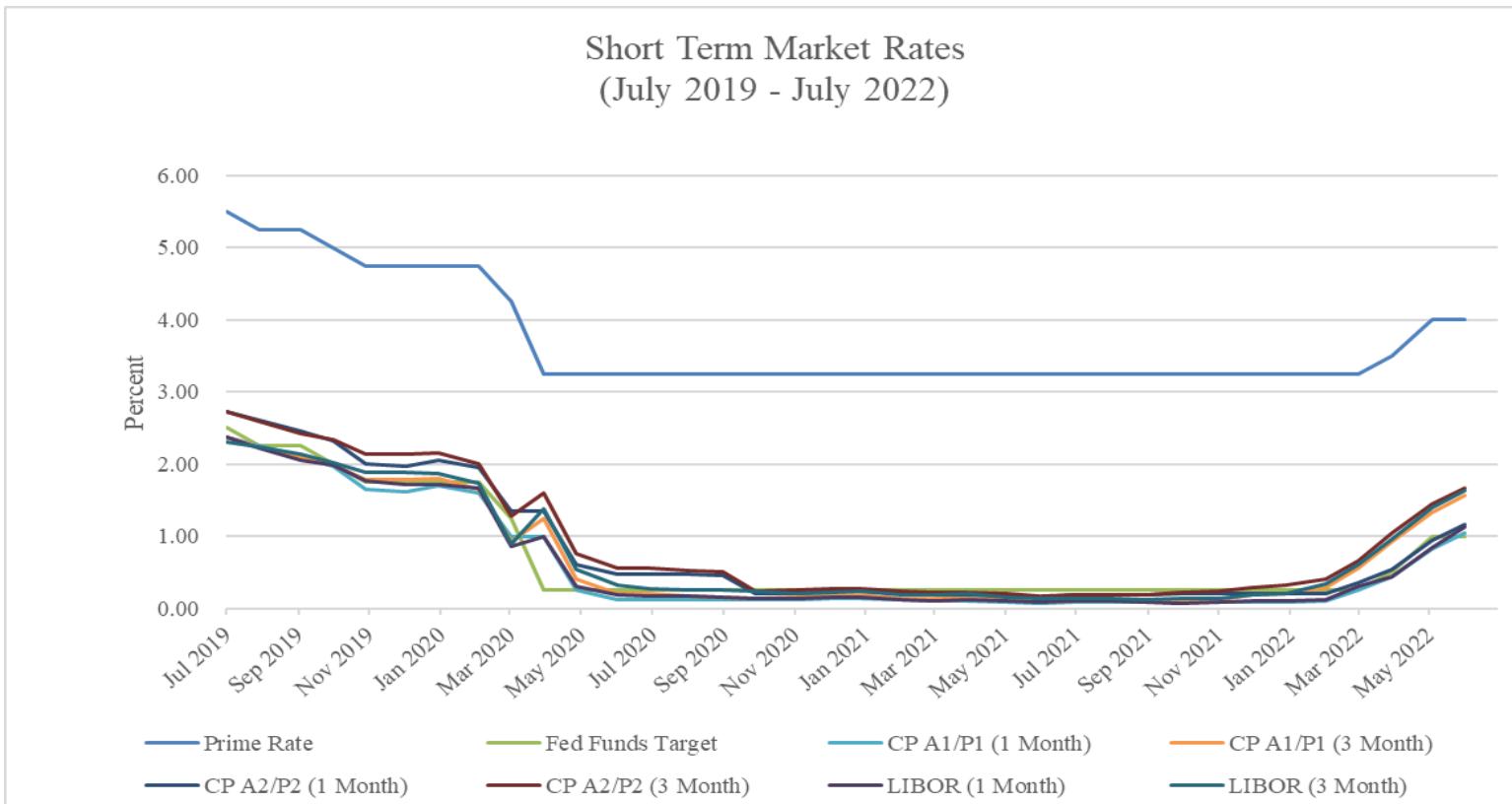
2018								
January	4.50	1.50	1.56	1.61	1.91	1.96	1.55	1.70
February	4.50	1.50	1.55	1.70	1.90	2.05	1.58	1.79
March	4.50	1.50	1.68	1.90	2.03	2.25	1.69	2.03
April	4.75	1.75	1.91	2.22	2.26	2.57	1.90	2.34
May	4.75	1.75	1.88	2.23	2.23	2.58	1.93	2.37
June	4.75	1.75	1.90	2.22	2.25	2.57	2.00	2.32
July	5.00	2.00	2.01	2.23	2.36	2.58	2.09	2.33
August	5.00	2.00	2.00	2.23	2.35	2.58	2.08	2.34
September	5.00	2.00	2.03	2.26	2.38	2.61	2.13	2.33
October	5.25	2.25	2.21	2.32	2.56	2.67	2.28	2.41
November	5.25	2.25	2.29	2.44	2.64	2.79	2.32	2.59
December	5.25	2.25	2.35	2.63	2.70	2.98	2.40	2.77
2019								
January	5.50	2.50	2.56	2.72	2.91	3.07	2.52	2.80
February	5.50	2.50	2.50	2.63	2.85	2.98	2.51	2.73
March	5.50	2.50	2.46	2.56	2.81	2.91	2.48	2.60
April	5.50	2.50	2.46	2.54	2.81	2.89	2.47	2.59
May	5.50	2.50	2.46	2.52	2.81	2.87	2.47	2.56
June	5.50	2.50	2.46	2.48	2.81	2.83	2.41	2.45
July	5.50	2.50	2.38	2.38	2.73	2.73	2.37	2.31
August	5.25	2.25	2.26	2.24	2.61	2.59	2.23	2.24
September	5.25	2.25	2.10	2.08	2.45	2.43	2.05	2.13
October	5.00	2.00	1.97	1.98	2.32	2.33	1.98	2.03
November	4.75	1.75	1.65	1.78	2.00	2.13	1.77	1.89
December	4.75	1.75	1.62	1.78	1.97	2.13	1.72	1.89
2020								
January	4.75	1.75	1.70	1.80	2.05	2.15	1.71	1.87
February	4.75	1.75	1.60	1.65	1.95	2.00	1.67	1.73
March	4.25	1.25	1.00	0.93	1.35	1.28	0.86	0.90
April	3.25	0.25	1.00	1.25	1.35	1.60	0.99	1.39
May	3.25	0.25	0.25	0.40	0.60	0.75	0.30	0.54
June	3.25	0.25	0.12	0.20	0.47	0.55	0.18	0.31
July	3.25	0.25	0.12	0.21	0.47	0.56	0.16	0.28
August	3.25	0.25	0.12	0.17	0.47	0.52	0.16	0.25
September	3.25	0.25	0.11	0.15	0.46	0.50	0.15	0.25
October	3.25	0.25	0.11	0.14	0.20	0.23	0.14	0.23
November	3.25	0.25	0.11	0.16	0.20	0.25	0.13	0.21
December	3.25	0.25	0.14	0.18	0.23	0.27	0.15	0.23
2021								
January	3.25	0.25	0.14	0.18	0.23	0.27	0.14	0.24
February	3.25	0.25	0.11	0.14	0.20	0.23	0.12	0.19
March	3.25	0.25	0.10	0.13	0.19	0.22	0.10	0.19
April	3.25	0.25	0.10	0.13	0.19	0.22	0.11	0.20
May	3.25	0.25	0.08	0.12	0.17	0.21	0.10	0.16
June	3.25	0.25	0.06	0.08	0.15	0.17	0.08	0.13
July	3.25	0.25	0.09	0.10	0.18	0.19	0.10	0.14
August	3.25	0.25	0.09	0.10	0.18	0.19	0.10	0.13
September	3.25	0.25	0.09	0.10	0.18	0.19	0.08	0.12
October	3.25	0.25	0.09	0.11	0.20	0.22	0.08	0.13
November	3.25	0.25	0.09	0.12	0.20	0.23	0.09	0.14
December	3.25	0.25	0.09	0.18	0.20	0.29	0.10	0.19
2022								
January	3.25	0.25	0.09	0.21	0.20	0.32	0.10	0.21
February	3.25	0.25	0.10	0.29	0.21	0.40	0.12	0.34
March	3.25	0.25	0.25	0.55	0.36	0.66	0.31	0.61
April	3.50	0.50	0.43	0.93	0.54	1.04	0.44	0.96
May	4.00	1.00	0.83	1.33	0.94	1.44	0.84	1.40
June	4.00	1.00	1.05	1.56	1.16	1.67	1.12	1.63
July								
August								
September								

SOURCE: S&P Capital IQ, Federal Reserve Statistical Release, Wall Street Journal
NOTE: Based on first Friday of each month

Short-term Debt Market Data







SOURCE: S&P Capital IQ, Federal Reserve Statistical Release, Wall Street Journal
NOTE: Based on first Friday of each month

U.S. Treasury Bond Yields and Yield Spreads vs. Utility Bonds

	Debt Security Yields (%)										Yield Spreads (Basis Points)														
	U.S. Treasuries		Moody's Seasoned Public Utility Bonds				Moody's Seasoned Corporate Bonds				Public Utility Bonds - US10Y Treasuries				Public Utility Bonds - US30Y Treasuries				Corporates - Public Utility Bonds				Public Utility Bond Tiers		
Year	**10Y**	**30Y**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aa - Aaa**	**A - Aa**	**Baa - A**
1982	14.59	14.22	-	14.79	15.86	16.45	-	-	-	-	-	20	126	186	-	57	163	223	-	-	-	-	-	107	60
1983	11.10	11.18	-	12.83	13.66	14.20	12.04	-	-	-	-	173	256	310	-	166	248	302	-	-	-	-	-	82	54
1984	12.46	12.41	-	13.66	14.03	14.53	12.72	-	-	-	-	120	157	208	-	125	162	213	-	-	-	-	-	38	50
1985	10.62	10.79	-	12.06	12.47	12.96	11.37	-	-	-	-	144	185	234	-	127	168	218	-	-	-	-	-	41	50
1986	7.67	7.78	8.92	9.30	9.58	10.00	9.02	-	-	10.39	125	163	191	233	114	152	180	222	10	-	-	38	38	28	42
1987	8.39	8.59	9.52	9.77	10.10	10.53	9.39	-	-	10.58	113	138	170	214	93	118	151	194	(13)	-	-	5	25	32	43
1988	8.85	8.96	10.05	10.26	10.49	11.00	9.71	-	-	10.83	120	141	164	215	109	130	153	204	(34)	-	-	(17)	21	23	51
1989	8.49	8.45	9.32	9.56	9.77	9.98	9.25	-	-	10.18	83	106	128	148	87	111	133	153	(7)	-	-	20	24	22	20
1990	8.55	8.61	9.45	9.65	9.86	10.06	9.32	-	-	10.36	90	110	131	151	84	104	125	145	(13)	-	-	30	20	21	20
1991	7.86	8.14	8.85	9.09	9.36	9.55	8.77	-	-	9.80	99	123	149	169	71	96	122	141	(8)	-	-	25	24	26	20
1992	7.01	7.67	8.12	8.45	8.58	8.75	8.14	8.37	8.51	8.97	111	144	157	174	45	78	92	109	2	(8)	(7)	22	33	13	17
1993	5.87	6.59	7.29	7.43	7.59	7.90	7.21	7.40	7.58	7.92	142	156	172	204	70	84	100	131	(8)	(3)	(1)	2	14	16	31
1994	7.09	7.37	8.06	8.19	8.30	8.62	7.97	8.15	8.28	8.63	98	111	121	154	69	82	93	125	(10)	(5)	(2)	0	13	10	33
1995	6.57	6.88	7.67	7.77	7.89	8.28	7.59	7.72	7.83	8.20	110	119	131	171	79	89	101	140	(8)	(5)	(6)	(8)	9	12	39
1996	6.44	6.71	7.49	7.57	7.75	8.17	7.37	7.55	7.69	8.06	104	112	131	172	78	86	104	146	(11)	(2)	(6)	(11)	8	18	42
1997	6.35	6.61	7.43	7.54	7.60	7.96	7.26	7.47	7.53	7.87	108	119	124	160	82	94	99	135	(16)	(7)	(6)	(9)	11	5	36
1998	5.26	5.58	6.77	6.91	7.04	7.26	6.53	6.80	6.93	7.22	151	164	178	200	120	133	147	169	(24)	(11)	(12)	(4)	13	14	22
1999	5.65	5.87	7.21	7.51	7.63	7.88	7.05	7.36	7.53	7.88	157	187	198	224	134	164	176	201	(16)	(16)	(10)	(1)	30	11	26
2000	6.03	5.94	7.88	8.06	8.25	8.36	7.62	7.83	8.11	8.37	185	203	222	233	194	212	231	242	(26)	(24)	(13)	1	18	18	11
2001	5.02	5.49	7.47	7.58	7.76	8.02	7.08	7.26	7.67	7.95	245	256	274	300	198	208	227	253	(39)	(31)	(9)	(8)	11	19	26
2002	4.61	5.43	-	7.19	7.37	8.02	6.49	6.93	7.18	7.80	-	258	276	341	-	176	194	259	-	(26)	(19)	(22)	-	18	65
2003	4.01	-	-	6.39	6.58	6.84	5.66	6.14	6.38	6.76	-	238	256	283	-	-	-	-	-	(25)	(20)	(8)	-	18	26
2004	4.27	-	-	6.04	6.16	6.39	5.63	5.90	6.07	6.39	-	176	189	212	-	-	-	-	-	(13)	(8)	0	-	12	23
2005	4.29	-	-	5.44	5.64	5.92	5.23	5.38	5.60	6.06	-	115	136	163	-	-	-	-	-	(7)	(5)	14	-	20	28
2006	4.80	4.91	-	5.84	6.07	6.32	5.59	5.81	6.09	6.48	-	105	128	153	-	93	116	141	-	(3)	1	16	-	23	25
2007	4.63	4.84	-	5.94	6.07	6.32	5.56	5.90	6.09	6.48	-	130	144	169	-	110	123	148	-	(4)	2	16	-	13	25
2008	3.66	4.28	-	6.18	6.52	7.21	5.63	6.09	6.58	7.44	-	252	286	355	-	191	224	294	-	(9)	6	22	-	34	69
2009	3.26	4.08	-	5.75	6.04	7.05	5.31	5.74	6.14	7.29	-	248	277	378	-	167	196	297	-	(1)	11	25	-	29	101
2010	3.22	4.25	-	5.23	5.46	5.96	4.94	5.18	5.44	6.04	-	202	225	274	-	98	121	171	-	(5)	(2)	8	-	23	50
2011	2.78	3.91	-	4.79	5.05	5.57	4.64	4.77	5.06	5.66	-	201	227	279	-	88	114	166	-	(1)	1	9	-	26	52
2012	1.80	2.92	-	3.83	4.13	4.86	3.67	3.81	4.16	4.94	-	203	233	306	-	91	121	194	-	(2)	3	8	-	30	73
2013	2.35	3.45	-	4.24	4.47	4.98	4.23	4.29	4.50	5.10	-	189	212	263	-	80	103	153	-	5	3	12	-	23	50
2014	2.54	3.34	-	4.19	4.28	4.80	4.16	4.22	4.34	4.85	-	165	174	226	-	85	94	146	-	4	6	6	-	9	52
2015	2.14	2.84	-	4.00	4.13	5.04	3.90	4.01	4.19	5.01	-	186	199	290	-	116	128	220	-	0	7	(3)	-	12	91
2016	1.84	2.59	-	3.72	3.93	4.67	3.66	3.74	3.95	4.71	-	188	209	283	-	113	133	207	-	2	3	4	-	20	74
2017	2.33	2.89	-	3.82	4.00	4.38	3.74	3.83	4.00	4.44	-	149	167	205	-	92	110	148	-	1	0	6	-	18	38
2018	2.91	3.11	-	4.09	4.25	4.67	3.93	4.08	4.25	4.80	-	118	134	176	-	98	114	156	-	(1)	(0)	13	-	16	42
2019	2.14	2.58	-	3.60	3.76	4.19	3.39	3.53	3.76	4.37	-	146	162	205	-	102	118	161	-	(7)	(0)	18	-	16	43
2020	0.89	1.56	-	2.79	3.02	3.39	2.47	2.64	2.97	3.61	-	190	213	250	-	123	146	184	-	(15)	(5)	21	-	23	38
2021	1.45	2.06	-	2.96	3.11	3.36	2.71	2.85	3.04	3.40	-	152	166	191	-	91	105	130	-	(11)	(6)	4	-	14	25
2022 YTD	2.40	2.62	-	3.94	4.11	4.41	2.81	3.76	4.03	4.44	-	152	166	191	-	132	149	179	-	(18)	(9)	3	-	18	30
Averages																									
1990-1994	7.28	7.68	8.35	8.56	8.74	8.98	8.28	4.78	4.87	9.14	108	129	146	170	68	89	106	130	(7)	(3)	(2)	16	21	17	24
1995-1999	6.06	6.33	7.31	7.46	7.58	7.91	7.16	7.38	7.50	7.84	126	140	152	185	99	113	125	158	(15)	(8)	(8)	(7)	14	12	33
2000-2004	4.79	3.37	3.07	7.05	7.22	7.53	6.50	6.81	7.08	7.45	86	226	243	274	78	119	130	151	(13)	(24)	(14)	(7)	6	17	30
2005-2009	4.13	3.62	-	5.83	6.07	6.57	5.46	5.78	6.10	6.75	-	170	194	244	-	112	132	176	-	(5)	3	19	-	24	50
2010-2014	2.54	3.57	-	4.46	4.68	5.23	4.33	4.46	4.70	5.32	-	192	214	270	-	88	111	166	-	(0)	2	9	-	22	55
2015-2019	2.27	2.80	-	3.85	4.01	4.59	3.72	3.84	4.03	4.67	-	158	174	232	-	104	121	178	-	(1)	2	8	-	17	57
2020-2022	1.58	2.08	-	3.23	3.41	3.72	-	3.08	3.34	3.81	-	164	182	211	-	115	133	164	-	(15)	(7)	9	-	18	31
LTM Average	1.11	1.83	-	2.81	3.01	3.30	2.54	2.69	2.95	3.41	-	152	190	220	-	98	118	148	-	(13)	(6)	11	-	20	29

SOURCE: S&P Capital IQ, Federal Reserve Statistical Release, and Mergent's Bond Record

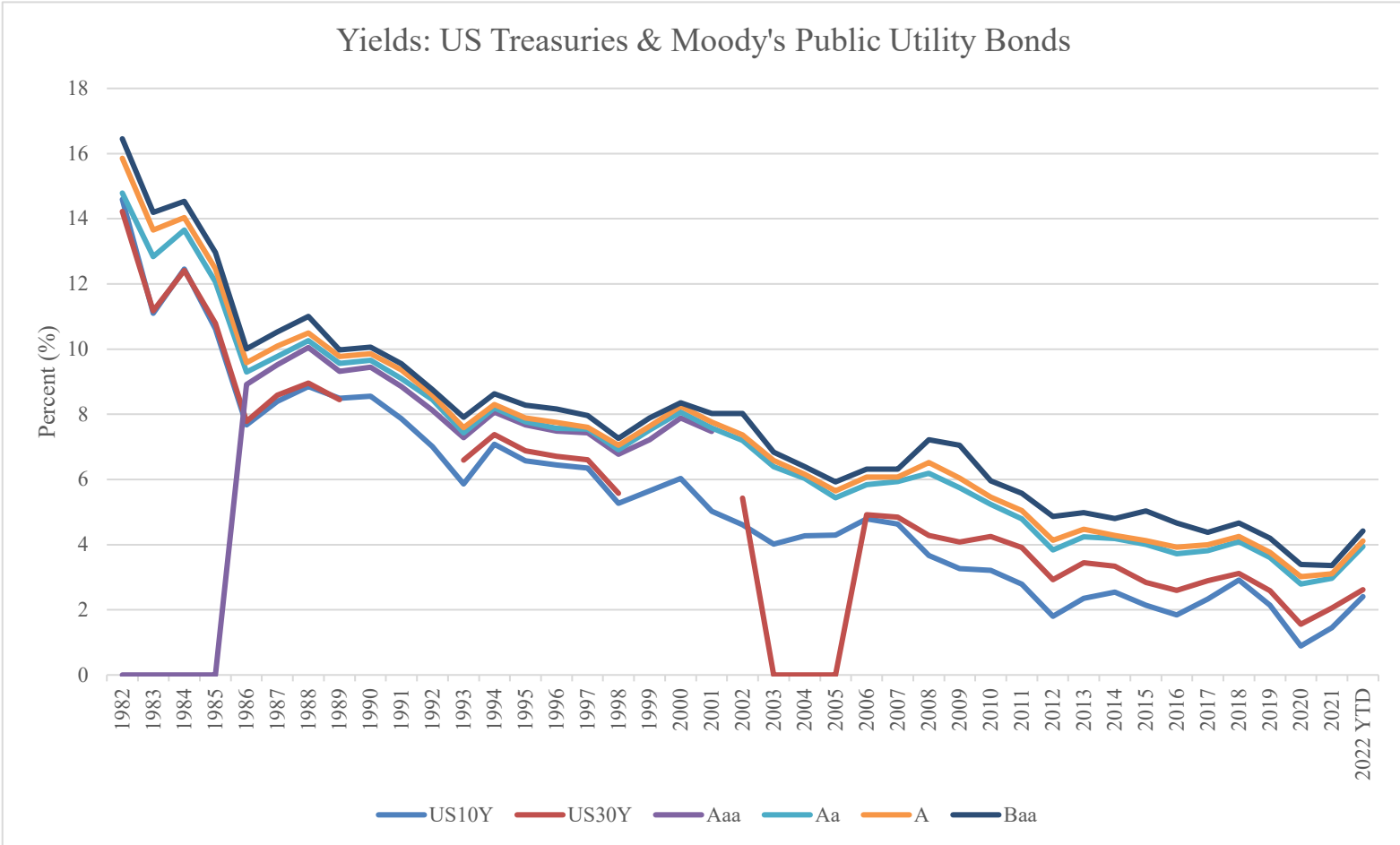
U.S. Treasury Bond Yields and Yield Spreads vs. Utility Bonds
Monthly Averages

	Debt Security Yields (%)										Yield Spreads (Basis Points)														
	U.S. Treasuries		Moody's Seasoned Public Utility Bonds				Moody's Seasoned Corporate Bonds				Public Utility Bonds - US10Y Treasuries				Public Utility Bonds - US30Y Treasuries				Corporates - Public Utility Bonds				Public Utility Bond Tiers		
Year	**10Y**	**30Y**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aaa**	**Aa**	**A**	**Baa**	**Aa - Aaa**	**A - Aa**	**Baa - A**
2014																									
January	2.85	3.77	-	4.44	4.63	5.09	4.49	4.53	4.69	5.19	-	159	178	224	-	67	86	132	-	9	6	10	-	19	46
February	2.71	3.66	-	4.38	4.53	5.01	4.45	4.46	4.60	5.10	-	168	183	230	-	72	87	135	-	8	6	9	-	15	47
March	2.72	3.62	-	4.40	4.51	5.00	4.38	4.44	4.56	5.06	-	167	179	227	-	78	89	137	-	5	5	7	-	11	49
April	2.71	3.52	-	4.30	4.41	4.85	4.24	4.33	4.45	4.90	-	159	170	214	-	78	89	133	-	3	4	6	-	11	44
May	2.56	3.39	-	4.16	4.26	4.69	4.16	4.20	4.31	4.76	-	160	170	213	-	77	87	130	-	4	5	7	-	10	43
June	2.60	3.42	-	4.23	4.29	4.73	4.25	4.26	4.35	4.80	-	163	170	213	-	81	87	131	-	3	6	7	-	6	43
July	2.54	3.33	-	4.16	4.23	4.66	4.16	4.20	4.28	4.73	-	162	168	212	-	83	89	133	-	4	6	7	-	7	44
August	2.42	3.20	-	4.07	4.13	4.65	4.08	4.10	4.20	4.69	-	165	171	223	-	87	93	145	-	3	7	4	-	6	52
September	2.53	3.26	-	4.18	4.24	4.79	4.11	4.19	4.30	4.80	-	164	170	225	-	92	98	153	-	1	6	2	-	6	55
October	2.30	3.04	-	3.98	4.06	4.67	3.92	3.99	4.13	4.69	-	167	176	237	-	94	102	163	-	1	7	2	-	8	61
November	2.33	3.04	-	4.03	4.09	4.75	3.92	4.04	4.18	4.79	-	171	177	243	-	100	105	171	-	1	9	4	-	6	66
December	2.21	2.83	-	3.90	3.95	4.70	3.79	3.90	4.06	4.74	-	170	174	249	-	107	112	186	-	(0)	11	4	-	5	75
Average	**2.54**	**3.34**	**-**	**4.19**	**4.28**	**4.80**	**4.16**	**4.22**	**4.34**	**4.86**	**-**	**165**	**174**	**226**	**-**	**85**	**94**	**146**	**-**	**3**	**6**	**6**	**-**	**9**	**52**
2015																									
January	1.88	2.46	-	3.53	3.58	4.40	3.47	3.54	3.70	4.46	-	164	170	251	-	107	113	194	-	2	12	6	-	6	81
February	1.97	2.56	-	3.62	3.67	4.44	3.61	3.64	3.81	4.51	-	165	170	246	-	106	111	187	-	2	13	7	-	5	77
March	2.04	2.63	-	3.67	3.75	4.49	3.64	3.74	3.85	4.54	-	163	171	244	-	105	113	186	-	6	9	5	-	8	73
April	1.94	2.59	-	3.64	3.76	4.51	3.54	3.66	3.86	4.49	-	170	182	258	-	105	117	193	-	3	10	(3)	-	12	75
May	2.20	2.96	-	4.05	4.17	4.91	3.98	4.07	4.24	4.89	-	185	197	271	-	109	122	195	-	2	6	(2)	-	12	74
June	2.36	3.11	-	4.29	4.39	5.13	4.19	4.27	4.45	5.13	-	192	203	276	-	117	128	202	-	(2)	6	(0)	-	10	74
July	2.32	3.07	-	4.27	4.40	5.22	4.15	4.25	4.44	5.20	-	195	207	290	-	121	133	216	-	(2)	5	(2)	-	13	82
August	2.17	2.86	-	4.13	4.25	5.23	4.04	4.13	4.32	5.19	-	197	208	306	-	128	139	237	-	(1)	7	(4)	-	11	98
September	2.17	2.95	-	4.25	4.39	5.42	4.07	4.21	4.43	5.34	-	207	221	325	-	129	143	247	-	(4)	4	(8)	-	14	103
October	2.07	2.89	-	4.13	4.29	5.47	3.95	4.11	4.34	5.34	-	206	222	340	-	124	141	258	-	(2)	4	(12)	-	17	117
November	2.26	3.03	-	4.22	4.40	5.57	4.06	4.21	4.43	5.46	-	195	214	331	-	119	137	254	-	(1)	3	(11)	-	19	117
December	2.24	2.97	-	4.16	4.35	5.55	3.97	4.16	4.38	5.46	-	192	211	331	-	119	138	258	-	0	2	(9)	-	20	120
Average	**2.14**	**2.84**	**-**	**4.00**	**4.12**	**5.03**	**3.89**	**4.00**	**4.19**	**5.00**	**-**	**186**	**198**	**289**	**-**	**116**	**128**	**219**	**-**	**0**	**7**	**(3)**	**-**	**12**	**91**
2016																									
January	2.09	2.86	-	4.09	4.27	5.49	4.00	4.12	4.35	5.45	-	200	218	340	-	123	141	263	-	3	8	(4)	-	18	122
February	1.78	2.62	-	3.94	4.11	5.28	3.96	3.98	4.22	5.34	-	216	233	350	-	132	149	266	-	4	11	6	-	17	117
March	1.89	2.68	-	3.93	4.16	5.12	3.82	3.91	4.16	5.13	-	204	227	323	-	125	147	244	-	(2)	0	1	-	23	97
April	1.81	2.62	-	3.74	4.00	4.75	3.62	3.71	3.98	4.79	-	193	219	294	-	112	137	212	-	(3)	(2)	4	-	26	75
May	1.81	2.63	-	3.65	3.93	4.60	3.65	3.70	3.94	4.68	-	185	212	279	-	102	130	197	-	4	1	8	-	27	67
June	1.64	2.45	-	3.56	3.78	4.47	3.50	3.60	3.80	4.53	-	191	213	282	-	110	132	201	-	4	3	6	-	22	69
July	1.50	2.23	-	3.36	3.57	4.16	3.28	3.39	3.58	4.22	-	186	207	266	-	113	135	193	-	3	0	6	-	21	59
August	1.56	2.26	-	3.39	3.59	4.20	3.32	3.42	3.60	4.24	-	183	203	265	-	113	132	194	-	3	2	4	-	19	62
September	1.63	2.35	-	3.47	3.66	4.27	3.41	3.50	3.68	4.31	-	184	203	264	-	112	131	192	-	3	2	4	-	19	61
October	1.76	2.50	-	3.59	3.77	4.34	3.51	3.61	3.78	4.38	-	183	201	258	-	109	127	184	-	2	1	3	-	18	57
November	2.14	2.86	-	3.90	4.07	4.64	3.85	3.93	4.10	4.70	-	176	193	249	-	104	121	177	-	3	4	6	-	17	57
December	2.49	3.11	-	4.11	4.27	4.79	4.06	4.12	4.28	4.83	-	162	178	230	-	100	116	168	-	1	1	3	-	16	52
Average	**1.84**	**2.60**	**-**	**3.73**	**3.93**	**4.68**	**3.66**	**3.75**	**3.96**	**4.71**	**-**	**189**	**209**	**283**	**-**	**113**	**133**	**208**	**-**	**2**	**3**	**4**	**-**	**20**	**74**
2017																									
January	2.43	3.02	-	3.96	4.14	4.62	3.92	3.98	4.16	4.66	-	153	171	219	-	94	112	160	-	3	2	4	-	18	48
February	2.42	3.03	-	3.99	4.18	4.58	3.95	4.01	4.18	4.64	-	157	176	216	-	96	115	154	-	2	1	6	-	19	40
March	2.48	3.08	-	4.04	4.23	4.62	4.01	4.06	4.23	4.68	-	156	175	213	-	96	115	153	-	2	1	7	-	19	39
April	2.30	2.94	-	3.93	4.12	4.51	3.87	3.93	4.12	4.57	-	163	182	221	-	99	118	157	-	(0)	(0)	6	-	19	39
May	2.30	2.96	-	3.94	4.12	4.50	3.85	3.93	4.11	4.55	-	163	182	219	-	98	116	154	-	(0)	(1)	5	-	19	37
June	2.19	2.80	-	3.77	3.94	4.32	3.68	3.78	3.93	4.37	-	158	175	214	-	97	115	153	-	1	(1)	5	-	17	38
July	2.32	2.88	-	3.82	3.99	4.36	3.70	3.80	3.98	4.39	-	150	168	204	-	93	111	148	-	(1)	(2)	3	-	18	37
August	2.21	2.80	-	3.67	3.86	4.23	3.63	3.72	3.88	4.31	-	146	165	203	-	88	107	144	-	4	2	8	-	19	37
September	2.20	2.78	-	3.70	3.87	4.24	3.63	3.73	3.88	4.30	-	150	166	203	-	93	109	146	-	3	1	7	-	16	37
October	2.36	2.88	-	3.74	3.91	4.26	3.60	3.74	3.91	4.32	-	138	155	190	-	86	103	138	-	0	(0)	6	-	17	35
November	2.35	2.80	-	3.65	3.83	4.16	3.57	3.67	3.84	4.27	-	130	148	181	-	85	103	136	-	2	1	10	-	18	33

December	2.40	2.77	-	3.62	3.79	4.14	3.51	3.61	3.79	4.22	-	122	139	173	-	85	103	137	-	(1)	(0)	9	-	17	34
Average	**2.33**	**2.89**	**-**	**3.82**	**4.00**	**4.38**	**3.74**	**3.83**	**4.00**	**4.44**	**-**	**149**	**167**	**205**	**-**	**92**	**110**	**148**	**-**	**1**	**0**	**6**	**-**	**18**	**38**
2018																										
January	2.58	2.88	-	3.69	3.86	4.18	3.55	3.68	3.85	4.26	-	111	128	160	-	81	98	130	-	(1)	(1)	8	-	17	32
February	2.86	3.13	-	3.94	4.09	4.42	3.82	3.95	4.09	4.51	-	108	123	156	-	81	96	129	-	1	1	9	-	15	33
March	2.84	3.09	-	3.97	4.13	4.52	3.87	3.99	4.14	4.64	-	113	129	168	-	88	104	143	-	2	1	12	-	16	39
April	2.87	3.07	-	3.99	4.17	4.58	3.85	4.01	4.17	4.67	-	112	130	171	-	92	109	150	-	2	0	9	-	18	41
May	2.98	3.13	-	4.10	4.28	4.71	4.00	4.12	4.30	4.83	-	112	130	173	-	97	115	158	-	1	2	12	-	18	43
June	2.91	3.05	-	4.12	4.28	4.71	3.96	4.11	4.29	4.84	-	120	136	180	-	107	123	166	-	(0)	1	12	-	16	44
July	2.89	3.01	-	4.10	4.27	4.67	3.87	4.07	4.26	4.79	-	121	138	178	-	109	127	166	-	(3)	(2)	12	-	18	40
August	2.89	3.04	-	4.08	4.26	4.64	3.88	4.05	4.23	4.77	-	119	137	175	-	104	122	160	-	(3)	(3)	12	-	18	38
September	3.00	3.15	-	4.18	4.32	4.72	3.98	4.18	4.30	4.86	-	117	132	172	-	103	117	157	-	0	(2)	14	-	15	40
October	3.15	3.34	-	4.31	4.45	4.91	4.14	4.28	4.46	5.07	-	116	130	175	-	97	111	157	-	(3)	0	16	-	15	45
November	3.12	3.36	-	4.40	4.52	5.03	4.22	4.37	4.53	5.22	-	128	141	191	-	103	116	167	-	(3)	0	20	-	13	51
December	2.83	3.10	-	4.24	4.37	4.92	4.02	4.20	4.37	5.13	-	140	154	208	-	114	128	182	-	(3)	(0)	22	-	14	54
Average	**2.91**	**3.11**	**-**	**4.09**	**4.25**	**4.67**	**3.93**	**4.08**	**4.25**	**4.80**	**-**	**118**	**134**	**176**	**-**	**98**	**114**	**155**	**-**	**(1)**	**(0)**	**13**	**-**	**16**	**42**
2019																										
January	2.71	3.04	-	4.18	4.35	4.91	3.93	4.13	4.34	5.12	-	147	164	220	-	115	132	188	-	(5)	(1)	21	-	17	56
February	2.68	3.02	-	4.05	4.25	4.76	3.79	3.99	4.23	4.95	-	137	157	208	-	103	122	173	-	(6)	(2)	19	-	20	51
March	2.57	2.98	-	3.98	4.16	4.65	3.77	3.92	4.17	4.84	-	141	159	208	-	100	118	167	-	(5)	1	19	-	18	49
April	2.53	2.94	-	3.91	4.08	4.55	3.69	3.85	4.08	4.70	-	137	155	201	-	96	114	161	-	(6)	0	16	-	18	47
May	2.40	2.82	-	3.84	3.98	4.47	3.67	3.80	4.01	4.63	-	144	159	208	-	102	116	165	-	(4)	2	16	-	14	49
June	2.07	2.57	-	3.65	3.82	4.31	3.42	3.59	3.83	4.46	-	157	174	224	-	107	124	174	-	(6)	1	15	-	17	50
July	2.06	2.57	-	3.53	3.69	4.13	3.29	3.46	3.70	4.28	-	147	164	207	-	96	112	156	-	(7)	1	15	-	16	44
August	1.63	2.12	-	3.17	3.29	3.63	2.98	3.08	3.32	3.87	-	154	167	200	-	105	117	151	-	(9)	3	24	-	12	34
September	1.70	2.16	-	3.24	3.37	3.71	3.03	3.14	3.37	3.91	-	154	167	201	-	109	122	155	-	(11)	(1)	20	-	13	34
October	0.79	1.57	-	2.72	2.95	3.27	2.35	2.55	2.88	3.44	-	193	216	249	-	115	138	170	-	(17)	(6)	17	-	23	33
November	0.87	1.62	-	2.64	2.86	3.18	2.31	2.47	2.80	3.30	-	177	199	231	-	102	124	157	-	(16)	(6)	12	-	22	32
December	0.93	1.67	-	2.57	2.77	3.05	2.26	2.44	2.72	3.16	-	164	184	212	-	90	110	138	-	(13)	(6)	12	-	20	28
Average	**1.91**	**2.42**	**-**	**3.46**	**3.63**	**4.05**	**3.21**	**3.37**	**3.62**	**4.22**	**-**	**154**	**172**	**214**	**-**	**103**	**121**	**163**	**-**	**(9)**	**(1)**	**17**		**18**	**42**
2021																										
January	1.76	2.22	-	3.12	3.29	3.60	2.94	3.02	3.27	3.77	-	136	153	184	-	90	107	139	-	(10)	(2)	17	-	17	31
February	1.50	1.97	-	2.96	3.11	3.42	2.78	2.85	3.09	3.61	-	145	161	192	-	98	114	145	-	(10)	(2)	19	-	16	31
March	0.87	1.46	-	3.30	3.50	3.96	3.02	3.08	3.43	4.29	-	243	263	309	-	185	205	251	-	(22)	(8)	33	-	20	46
April	0.66	1.27	-	2.93	3.19	3.82	2.43	2.75	3.12	4.13	-	227	253	316	-	166	192	255	-	(18)	(7)	31	-	26	63
May	0.67	1.38	-	2.89	3.14	3.63	2.49	2.72	3.12	3.95	-	222	246	296	-	151	176	225	-	(17)	(2)	32	-	25	50
June	0.73	1.49	-	2.80	3.07	3.44	2.41	2.63	3.02	3.65	-	207	234	271	-	131	157	195	-	(17)	(5)	21	-	27	37
July	0.62	1.31	-	2.46	2.74	3.09	2.14	2.32	2.69	3.31	-	184	212	247	-	115	143	178	-	(15)	(6)	22	-	28	35
August	0.65	1.36	-	2.49	2.73	3.06	2.25	2.37	2.68	3.27	-	184	208	241	-	113	137	170	-	(12)	(5)	22	-	24	33
September	0.68	1.42	-	2.62	2.84	3.17	2.31	2.47	2.79	3.36	-	194	216	249	-	119	142	175	-	(15)	(5)	20	-	23	33
October	0.79	1.57	-	2.72	2.95	3.27	2.35	2.55	2.88	3.44	-	193	216	249	-	115	138	170	-	(17)	(6)	17	-	23	33
November	0.87	1.62	-	2.64	2.86	3.18	2.31	2.47	2.80	3.30	-	177	199	231	-	102	124	157	-	(16)	(6)	12	-	22	32
December	0.93	1.67	-	2.57	2.77	3.05	2.26	2.44	2.72	3.16	-	164	184	212	-	90	110	138	-	(13)	(6)	12	-	20	28
Average	**0.89**	**1.56**	**-**	**2.79**	**3.02**	**3.39**	**2.47**	**2.64**	**2.97**	**3.61**	**-**	**190**	**212**	**250**	**-**	**123**	**146**	**183**	**-**	**(15)**	**(5)**	**21**		**23**	**38**
2022																										
January	1.08	1.82	-	2.73	2.91	3.18	2.45	2.61	2.84	3.24	-	165	183	210	-	90	108	136	-	(12)	(7)	6	-	18	27
February	1.26	2.04	-	2.93	3.09	3.37	2.70	2.83	3.03	3.42	-	167	183	212	-	89	104	133	-	(10)	(6)	5	-	16	29
March	1.61	2.34	-	3.27	3.44	3.72	3.04	3.17	3.37	3.74	-	166	183	211	-	93	110	138	-	(11)	(7)	3	-	16	28
April	1.64	2.30	-	3.13	3.30	3.57	2.90	3.03	3.24	3.60	-	149	166	193	-	83	100	127	-	(10)	(6)	4	-	17	27
May	1.62	2.32	-	3.17	3.33	3.58	2.96	3.07	3.27	3.62	-	155	171	196	-	86	102	127	-	(11)	(6)	4	-	16	25
June	1.52	2.16	-	3.01	3.16	3.41	2.79	2.91	3.10	3.45	-	149	164	189	-	84	100	125	-	(10)	(6)	3	-	15	25
July																										
August																										
September																										
October																										
November																										
December																										
Average	**1.45**	**2.16**	**-**	**3.04**	**3.20**	**3.47**	**2.80**	**2.94**	**3.14**	**3.51**	**-**	**159**	**175**	**202**	**-**	**88**	**104**	**131**	**-**	**(10)**	**(6)**	**4**	**-**	**16**	**27**
LTM Average	**1.11**	**1.83**	**-**	**2.81**	**3.01**	**3.30**	**2.54**	**2.69**	**2.95**	**3.41**	**-**	**171**	**190**	**220**	**-**	**98**	**118**	**148**	**-**	**(13)**	**(6)**	**11**	**-**	**20**	**29**

SOURCE: S&P Capital IQ, Federal Reserve Statistical Release, and Mergent's Bond Record

US Treasury and Moody's Public Utility Bond Yields
January 1982 - June 2022



SOURCE: S&P Capital IQ, Mergent Bond Record

Forecasted Interest Rates on Short and Long-Term Debt
(Percent)

		2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	2023 Average
Prime Rate	June 2022	4.00	4.80	5.20	5.60	5.90	6.10		**5.87**
	July 2022	3.90	5.40	6.20	6.60	6.70	6.60	6.50	**6.60**
Federal Funds Rate	June 2022	1.00	1.70	2.20	2.60	2.90	3.00		**2.83**
	July 2022	0.73	2.40	3.10	3.50	3.50	3.50	3.40	**3.48**
SOFR	June 2022	0.80	1.60	2.10	2.50	2.70	2.90		**2.70**
	July 2022	0.69	2.10	2.90	3.40	3.50	3.40	3.30	**3.40**
A-1/P-1 CP Rate (1-month)	June 2022	0.90	1.70	2.10	2.60	2.80	3.00		**2.80**
	July 2022	0.80	2.20	3.00	3.40	3.40	3.40	3.30	**3.38**
T-Bill Yield (3-month)	June 2022	1.00	1.80	2.20	2.60	2.80	2.90		**2.77**
	July 2022	1.08	2.30	3.00	3.40	3.40	3.40	3.30	**3.38**
T-Bill Yield (6 month)	June 2022	1.40	2.10	2.40	2.80	3.00	3.10		**2.97**
	July 2022	1.62	2.70	3.30	3.50	3.60	3.50	3.40	**3.50**
T-Bill Yield (1 year)	June 2022	2.00	2.40	2.70	3.00	3.10	3.20		**3.10**
	July 2022	2.18	3.00	3.50	3.70	3.70	3.60	3.50	**3.63**
T-Note Yield (5 year)	June 2022	2.80	3.00	3.10	3.30	3.30	3.30		**3.30**
	July 2022	2.95	3.40	3.60	3.60	3.60	3.60	3.50	**3.58**
T-Note Yield (10 year)	June 2022	2.90	3.10	3.20	3.40	3.50	3.50		**3.47**
	July 2022	2.93	3.30	3.50	3.60	3.60	3.60	3.60	**3.60**
T-Bond Yield (30 year)	June 2022	3.00	3.30	3.40	3.50	3.60	3.60		**3.57**
	July 2022	3.04	3.50	3.60	3.70	3.80	3.80	3.80	**3.78**
Corporate Aaa Bond	June 2022	4.00	4.20	4.40	4.60	4.70	4.80		**4.70**
	July 2022	4.30	4.70	5.00	5.10	5.10	5.10	5.10	**5.10**
Corporate Baa Bond	June 2022	4.80	5.10	5.30	5.50	5.60	5.70		**5.60**
	July 2022	4.97	5.60	6.00	6.20	6.20	6.20	6.20	**6.20**

Source: Blue Chip Financial Forecasts

Wisconsin Public Service Corporation
Forecasted Interest Rates on Long-Term Debt (2022-2023)
(Percent)

	1Q22	2Q22	3Q22	4Q22	Avg 2022	1Q23	2Q23	3Q23	4Q23	Avg 2023
Blue Chip Financial Forecasts - June 2022										
T-Note Yield (10 year)	1.94	2.90	3.10	3.20	2.79	3.40	3.40	3.40	3.40	3.40
T-Bond Yield (30 year)	2.25	3.00	3.30	3.40	2.99	3.50	3.60	3.60	3.60	3.58
'Baa' Rated Corporate Bond	3.90	5.00	5.40	5.60	4.98	5.70	5.80	5.80	5.80	5.78
IHS Global Insight - June 2022 U.S. Economic Outlook										
'Baa' Rated Corporate Bonds	4.03	5.08	5.24	5.25	4.90	5.24	5.24	5.24	5.24	5.24

Utility Bond Yields
January 2019-June 2022

'A' Rated		'Baa' Rated	
Max	4.35	Max	4.91
Average	3.30	Average	3.67
Min	2.73	Min	3.05

Commission Staff Analysis of Future Issuances	1Q22	2Q22	3Q22	4Q22	Avg 2022	1Q23	2Q23	3Q23	4Q23	Avg 2023
'Baa' Rated Corporate Bond (Blue Chip + IHS Average)	3.97	5.04	5.32	5.43	4.94	5.47	5.52	5.52	5.52	5.51
LTM Yield Spread: 'Baa' Corporate - 'Baa' Utility	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
'Baa' Rated Utility Bond	**3.86**	**4.93**	**5.21**	**5.32**	**4.83**	**5.36**	**5.41**	**5.41**	**5.41**	**5.40**
LTM Yield Spread: 'Baa' Rated Utility - 'A' Rated Utility	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
'A' Rated Utility Bond	**3.56**	**4.64**	**4.92**	**5.02**	**4.54**	**5.07**	**5.12**	**5.12**	**5.12**	**5.11**

Source: Blue Chip Financial Forecasts, IHS Global Insight, S&P Capital IQ

Historical Rates of Inflation
(Based on Consumer Price Index)

Year	Rate of Change	Year	Rate of Change
1964	1.31%	1993	3.00%
1965	1.72%	1994	2.60%
1966	2.86%	1995	2.80%
1967	2.88%	1996	2.90%
1968	4.20%	1997	2.30%
1969	5.37%	1998	1.60%
1970	5.92%	1999	2.20%
1971	4.30%	2000	3.40%
1972	3.30%	2001	2.80%
1973	6.23%	2002	1.60%
1974	10.97%	2003	2.30%
1975	9.14%	2004	2.70%
1976	5.77%	2005	3.40%
1977	6.45%	2006	3.20%
1978	7.66%	2007	2.90%
1979	11.26%	2008	3.70%
1980	13.52%	2009	-0.40%
1981	10.37%	2010	1.60%
1982	6.13%	2011	3.20%
1983	3.22%	2012	2.10%
1984	4.26%	2013	1.50%
1985	3.55%	2014	1.60%
1986	1.92%	2015	0.10%
1987	3.65%	2016	1.30%
1988	4.08%	2017	2.10%
1989	4.80%	2018	2.40%
1990	5.36%	2019	1.80%
1991	4.20%	2020	1.20%
1992	3.00%	2021	4.70%

Forecasted Annual Rates of Inflation
(Based on Consumer Price Index)

Forecasting Source	2022	2023
IHS Global Insight U.S. Economic Outlook, June 2022	7.50%	3.40%
Blue Chip Economic Indicators, June 2022	7.40%	3.30%
Staff Estimate, June 2022	7.20%	3.20%

Discounted Cash Flow Sensitivity

2.50% Terminal Growth Rate

9.80% Required return on equity

10-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	9.08%	$0.35		$0.35	1.0797	$0.32
2	9.08%	$0.38		$0.38	1.1657	$0.33
3	9.08%	$0.41		$0.41	1.2585	$0.33
4	9.08%	$0.45		$0.45	1.3588	$0.33
5	9.08%	$0.49		$0.49	1.4670	$0.34
6	9.08%	$0.54		$0.54	1.5838	$0.34
7	9.08%	$0.59		$0.59	1.7100	$0.34
8	9.08%	$0.64		$0.64	1.8462	$0.35
9	9.08%	$0.70		$0.70	1.9933	$0.35
10	9.08%	$0.76	$14.26	$15.02	2.1520	$6.98

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 7.97%

10-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	9.08%	$0.35		$0.35	1.0980	$0.32
2	9.08%	$0.38		$0.38	1.2056	$0.31
3	9.08%	$0.41		$0.41	1.3238	$0.31
4	9.08%	$0.45		$0.45	1.4535	$0.31
5	9.08%	$0.49		$0.49	1.5959	$0.31
6	9.08%	$0.54		$0.54	1.7523	$0.31
7	9.08%	$0.59		$0.59	1.9241	$0.30
8	9.08%	$0.64		$0.64	2.1126	$0.30
9	9.08%	$0.70		$0.70	2.3196	$0.30
10	9.08%	$0.76	$17.64	$18.40	2.5470	$7.22

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 9.80%
Long Range Growth Rate: 5.26%

5-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	9.08%	$0.35		$0.35	1.0545	$0.33
2	11.92%	$0.40		$0.40	1.1119	$0.36
3	0.00%	$0.32		$0.32	1.1724	$0.27
4	2.50%	$0.35		$0.35	1.2362	$0.28
5	0.00%	$0.32	$11.09	$11.41	1.3036	$8.75

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.45%

5-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	9.08%	$0.35		$0.35	1.0980	$0.32
2	9.08%	$0.38		$0.38	1.2056	$0.31
3	9.08%	$0.41		$0.41	1.3238	$0.31
4	9.08%	$0.45		$0.45	1.4535	$0.31
5	9.08%	$0.49	$13.47	$13.96	1.5959	$8.75

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 9.80%
Long Range Growth Rate: 5.93%

1-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	9.08%	$0.35	$10.25	$10.60	1.0598	$10.00

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.98%

1-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	9.08%	$0.35	$10.63	$10.98	1.0980	$10.00

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 9.80%
Long Range Growth Rate: 6.32%

One Stage DCF Calculation

Dividend Yield		Growth Adjustment		Growth Rate		Required Return
3.19%	x	106.41%	+	6.41%	=	9.80%
					Balancing:	0.00%

Long Range Growth Rate: 6.41%

Discounted Cash Flow Model Results

10-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	5.11%	$0.34		$0.34	1.0655	$0.31
2	5.11%	$0.35		$0.35	1.1353	$0.31
3	5.11%	$0.37		$0.37	1.2096	$0.31
4	5.11%	$0.39		$0.39	1.2888	$0.30
5	5.11%	$0.41		$0.41	1.3732	$0.30
6	5.11%	$0.43		$0.43	1.4632	$0.29
7	5.11%	$0.45		$0.45	1.5590	$0.29
8	5.11%	$0.47		$0.47	1.6611	$0.29
9	5.11%	$0.50		$0.50	1.7699	$0.28
10	5.11%	$0.52	$13.28	$13.80	1.8858	$7.32

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 6.55%

One Stage DCF Calculation

Dividend Yield		Growth Adjustment		Growth Rate		Required Return
3.00%	x	105.11%	+	5.11%	=	8.26%

Min 5.85%
Max 8.26%

	One Stage		
	Yield	**Growth**	**r**
EPS	3.00%	9.08%	12.08%
DPS	3.00%	5.11%	8.11%

5-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	5.11%	$0.34		$0.34	1.0617	$0.32
2	5.11%	$0.35		$0.35	1.1273	$0.31
3	5.11%	$0.37		$0.37	1.1969	$0.31
4	5.11%	$0.39		$0.39	1.2708	$0.31
5	5.11%	$0.41	$11.41	$11.82	1.3493	$8.76

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 6.17%

1-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.32				
1	5.11%	$0.34	$10.25	$10.59	1.0585	$10.00

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.85%

Date Updated **6/30/2022**

Discounted Cash Flow Model
Peer Group - WPSC
As of June 30, 2022

Company	Ticker	Utility Classification	2Y Beta	Stock Price	Market Cap ($millions)	Current Dividend Yield	FY+1 Dividend Yield	S&P/CapIQ Consensus EPS FY2021	FY2022	FY2023	FY2024	EPS CAGR (2021-2024e)	Fwd Earnings Yield	S&P/CapIQ Consensus DPS FY2021	FY2022	FY2023	FY2024	DPS CAGR (2021-2024e)
Avista Corporation	NYSE:AVA	Multi-Utilities	0.46	$43.51	$3,152	4.05%	3.88%	2.10	1.96	2.47	2.62	7.65%	4.83%	1.69	1.76	1.84	1.92	4.34%
Black Hills Corporation	NYSE:BKH	Multi-Utilities	0.68	$72.77	$4,718	3.27%	3.14%	3.74	4.08	4.29	4.51	6.46%	5.14%	2.28	2.40	2.53	2.65	5.11%
CMS Energy Corporation	NYSE:CMS	Multi-Utilities	0.52	$67.50	$19,584	2.73%	2.58%	2.58	2.88	3.12	3.39	9.50%	3.82%	1.74	1.84	1.97	2.11	6.62%
MGE Energy, Inc.	NasdaqGS:MGEE	Electric Utilities	0.52	$77.83	$2,815	1.99%	1.96%	2.92	3.14	3.32	3.79	9.08%	3.75%	1.52	1.59	1.67	1.75	4.77%
NiSource Inc.	NYSE:NI	Multi-Utilities	0.57	$29.49	$11,967	3.19%	3.00%	1.27	1.45	1.55	1.72	10.55%	4.32%	0.88	0.94	1.00	1.04	5.64%
NorthWestern Corporation	NasdaqGS:NWE	Multi-Utilities	0.51	$58.93	$3,190	4.28%	4.21%	3.60	3.31	3.51	3.68	0.77%	6.11%	2.48	2.53	2.58	2.65	2.20%
Sempra	NYSE:SRE	Multi-Utilities	0.60	$150.27	$47,245	3.05%	2.93%	4.01	8.53	8.99	9.62	33.86%	2.67%	4.40	4.66	4.90	5.28	6.26%
The Southern Company	NYSE:SO	Electric Utilities	0.63	$71.31	$75,848	3.81%	3.68%	2.24	3.56	3.78	4.11	22.39%	3.14%	2.62	2.70	2.79	2.90	3.41%
Xcel Energy Inc.	NasdaqGS:XEL	Electric Utilities	0.48	$70.76	$38,540	2.76%	2.58%	2.96	3.17	3.40	3.63	7.02%	4.18%	1.82	1.94	2.08	2.21	6.54%
Observations			9			9	9	9	9	9	9	9	9	9	9	9	9	9
MEDIAN			0.52			3.19%	3.00%					9.08%	4.18%		Short-Term Growth			5.11%
AVERAGE			0.55			3.23%	3.11%					11.92%	4.22%					4.99%
						2.50%	2.50%					2.50%	2.50%		Long-Term Growth			2.50%

Period Beg 4/1/2022
Period End 6/30/2022

Discounted Cash Flow Model - Combination Utility Peer Group
Peer Group - WPSC
90 Day Period Ending June 30, 2022

								S&P/CapIQ Consensus EPS						S&P/CapIQ Consensus DPS				
Company	**Ticker**	**Utility Classification**	**2Y Beta**	**Stock Price**	**Market Cap ($millions)**	**Current Dividend Yield**	**FY+1 Dividend Yield**	**FY2021**	**FY2022**	**FY2023**	**FY2024**	**EPS CAGR (2021-2024e)**	**Fwd Earnings Yield**	**FY2021**	**FY2022**	**FY2023**	**FY2024**	**DPS CAGR (2021-2024e)**
Avista Corporation	NYSE:AVA	Multi-Utilities	0.63	$45.75	$3,274	3.85%	3.69%	2.10	2.02	2.45	2.61	7.54%	4.59%	1.69	1.76	1.84	1.92	4.34%
Black Hills Corporation	NYSE:BKH	Multi-Utilities	0.88	$78.44	$5,081	3.03%	2.91%	3.74	4.07	4.30	4.54	6.67%	4.77%	2.28	2.40	2.53	2.65	5.04%
CMS Energy Corporation	NYSE:CMS	Multi-Utilities	0.59	$71.10	$20,629	2.59%	2.45%	2.58	2.87	3.13	3.40	9.63%	3.63%	1.74	1.84	1.96	2.10	6.48%
MGE Energy, Inc.	NasdaqGS:MGEE	Electric Utilities	0.76	$81.42	$2,944	1.90%	1.87%	2.92	3.15	3.46	3.79	9.08%	3.59%	1.52	1.59	1.67	1.75	4.77%
NiSource Inc.	NYSE:NI	Multi-Utilities	0.68	$32.08	$13,005	2.93%	2.76%	1.27	1.45	1.55	1.72	10.52%	3.97%	0.88	0.94	0.99	1.04	5.42%
NorthWestern Corporation	NasdaqGS:NWE	Multi-Utilities	0.91	$61.11	$3,308	4.12%	4.06%	3.60	3.32	3.51	3.66	0.51%	5.89%	2.48	2.53	2.59	2.66	2.30%
Sempra	NYSE:SRE	Multi-Utilities	0.86	$170.34	$53,680	2.69%	2.58%	4.01	8.48	8.96	9.56	33.58%	2.35%	4.40	4.66	4.95	5.21	5.81%
The Southern Company	NYSE:SO	Electric Utilities	0.80	$74.12	$78,671	3.56%	3.54%	2.24	3.55	3.79	4.10	22.33%	3.02%	2.62	2.70	2.79	2.91	3.54%
Xcel Energy Inc.	NasdaqGS:XEL	Electric Utilities	0.58	$72.75	$39,592	2.68%	2.51%	2.96	3.17	3.40	3.62	6.98%	4.07%	1.82	1.96	2.09	2.22	6.77%
Observations			9			9	9	9	9	9	9	9	9	9	9	9	9	9
MEDIAN			0.76			2.93%	2.76%					9.08%	3.97%		Short-Term Growth			5.04%
AVERAGE			0.74			3.04%	2.93%					11.87%	3.99%					4.94%
						2.50%	2.50%					2.50%	2.50%		Long-Term Growth			2.50%

Discounted Cash Flow Model Results

10-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	5.04%	$0.31		$0.31	1.0621	$0.29
2	5.04%	$0.32		$0.32	1.1281	$0.29
3	5.04%	$0.34		$0.34	1.1982	$0.28
4	5.04%	$0.36		$0.36	1.2727	$0.28
5	5.04%	$0.37		$0.37	1.3517	$0.28
6	5.04%	$0.39		$0.39	1.4357	$0.27
7	5.04%	$0.41		$0.41	1.5249	$0.27
8	5.04%	$0.43		$0.43	1.6197	$0.27
9	5.04%	$0.46		$0.46	1.7203	$0.27
10	5.04%	$0.48	$13.23	$13.71	1.8272	$7.50

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 6.21%

One Stage DCF Calculation

Dividend Yield		Growth Adjustment		Growth Rate		Required Return
2.76%	x	105.04%	+	5.04%	=	7.94%

Min 5.58%
Max 7.94%

	One Stage		
	Yield	**Growth**	**r**
EPS	2.76%	9.08%	11.84%
DPS	2.76%	5.04%	7.80%

5-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	5.04%	$0.31		$0.31	1.0587	$0.29
2	5.04%	$0.32		$0.32	1.1209	$0.29
3	5.04%	$0.34		$0.34	1.1867	$0.29
4	5.04%	$0.36		$0.36	1.2563	$0.28
5	5.04%	$0.37	$11.40	$11.77	1.3301	$8.85

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.87%

1-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	5.04%	$0.31	$10.25	$10.56	1.0558	$10.00

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.58%

Discounted Cash Flow Sensitivity

2.50% Terminal Growth Rate

9.80% Required return on equity

10-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	9.08%	$0.32		$0.32	1.0756	$0.30
2	9.08%	$0.35		$0.35	1.1569	$0.30
3	9.08%	$0.38		$0.38	1.2444	$0.31
4	9.08%	$0.41		$0.41	1.3384	$0.31
5	9.08%	$0.45		$0.45	1.4396	$0.31
6	9.08%	$0.49		$0.49	1.5484	$0.32
7	9.08%	$0.54		$0.54	1.6655	$0.32
8	9.08%	$0.59		$0.59	1.7914	$0.33
9	9.08%	$0.64		$0.64	1.9268	$0.33
10	9.08%	$0.70	$14.16	$14.86	2.0725	$7.17

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 7.56%

10-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	9.08%	$0.32		$0.32	1.0980	$0.29
2	9.08%	$0.35		$0.35	1.2056	$0.29
3	9.08%	$0.38		$0.38	1.3238	$0.29
4	9.08%	$0.41		$0.41	1.4535	$0.29
5	9.08%	$0.45		$0.45	1.5959	$0.28
6	9.08%	$0.49		$0.49	1.7523	$0.28
7	9.08%	$0.54		$0.54	1.9241	$0.28
8	9.08%	$0.59		$0.59	2.1126	$0.28
9	9.08%	$0.64		$0.64	2.3196	$0.28
10	9.08%	$0.70	$18.27	$18.97	2.5470	$7.45

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 9.80%
Long Range Growth Rate: 5.75%

5-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	9.08%	$0.32		$0.32	1.0520	$0.30
2	11.87%	$0.37		$0.37	1.1068	$0.33
3	0.00%	$0.29		$0.29	1.1644	$0.25
4	2.50%	$0.32		$0.32	1.2249	$0.26
5	0.00%	$0.29	$11.11	$11.40	1.2887	$8.85

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.20%

5-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	9.08%	$0.32		$0.32	1.0980	$0.29
2	9.08%	$0.35		$0.35	1.2056	$0.29
3	9.08%	$0.38		$0.38	1.3238	$0.29
4	9.08%	$0.41		$0.41	1.4535	$0.29
5	9.08%	$0.45	$13.67	$14.12	1.5959	$8.85

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 9.80%
Long Range Growth Rate: 6.28%

1-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	9.08%	$0.32	$10.25	$10.57	1.0570	$10.00

Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 5.70%

1-year Two Stage DCF Calculation

Year	Short-term Growth Rate	Dividend	Sale Price of Stock	Cash Flow	PV Factor	PV of Cash Flow
0		$0.29				
1	9.08%	$0.32	$10.66	$10.98	1.0980	$10.00

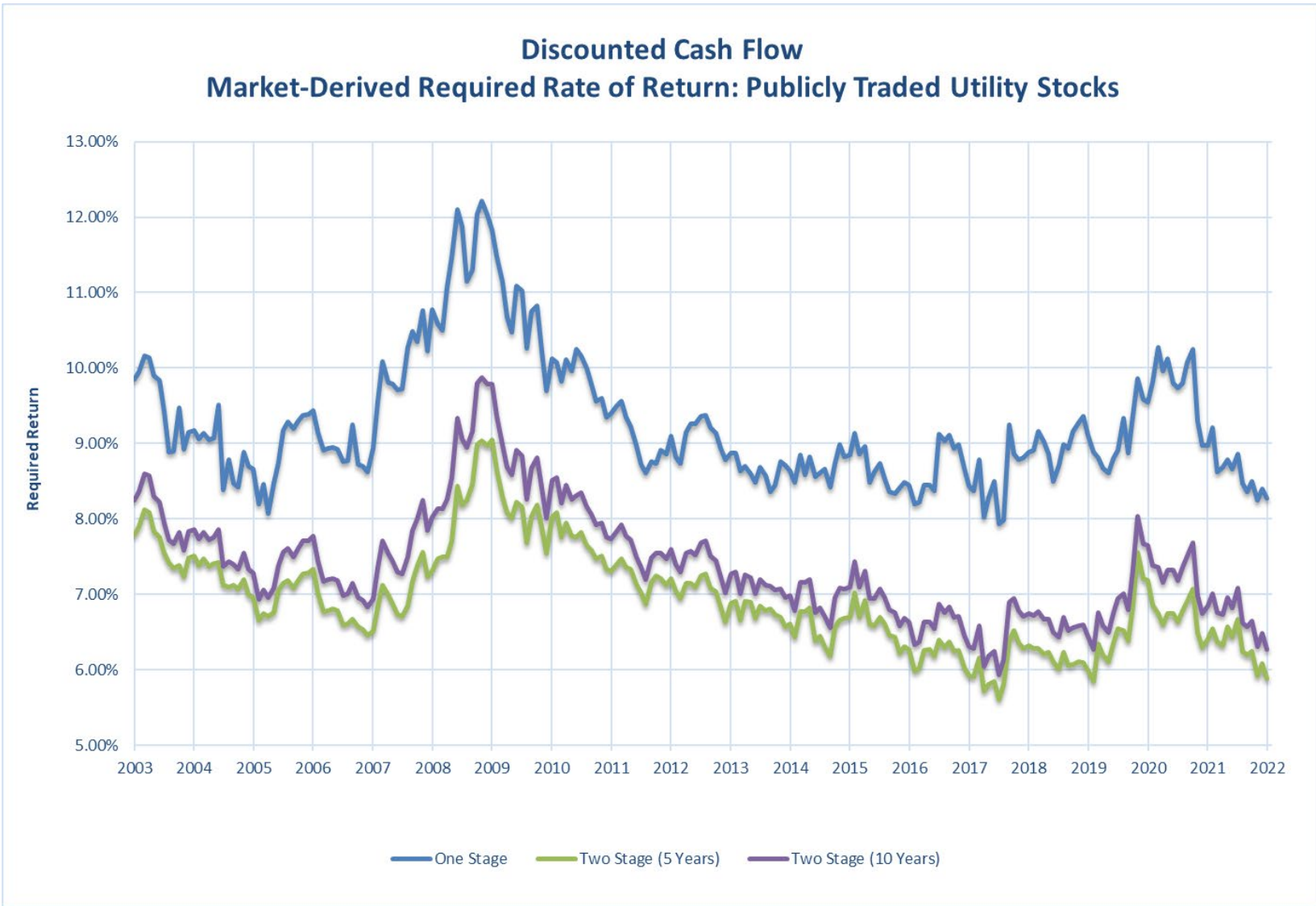
Market Price of Stock and Present Value of Cash Flow: $10.00
Balancing: $0.00
Cost of Equity: 9.80%
Long Range Growth Rate: 6.60%

One Stage DCF Calculation

Dividend Yield		Growth Adjustment		Growth Rate		Required Return
2.93%	x	106.67%	+	6.67%	=	9.80%
					Balancing:	0.00%

Long Range Growth Rate: 6.67%

Discounted Cash Flow
Electric and Gas Utility Stocks (2003-2022)



National Average Utility Returns on Equity Authorized

January 1980 - June 2021

Quarter Ending	Electric: All	Electric: Vertically Integrated	Natural Gas
3/31/1980	13.97	13.97	13.45
6/30/1980	14.25	14.25	14.38
9/30/1980	14.30	14.30	13.87
12/31/1980	14.32	14.32	14.35
3/31/1981	14.82	14.82	14.71
6/30/1981	15.05	15.05	14.61
9/30/1981	15.31	15.31	14.86
12/31/1981	15.59	15.59	15.70
3/31/1982	15.71	15.71	15.55
6/30/1982	15.60	15.60	15.62
9/30/1982	15.85	15.85	15.77
12/31/1982	16.03	16.03	15.63
3/31/1983	15.54	15.54	15.41
6/30/1983	15.13	15.13	14.84
9/30/1983	15.39	15.39	15.24
12/31/1983	15.37	15.37	15.40
3/31/1984	15.06	15.06	15.39
6/30/1984	15.18	15.18	15.07
9/30/1984	15.38	15.38	15.46
12/31/1984	15.69	15.69	15.33
3/31/1985	15.48	15.48	15.03
6/30/1985	15.27	15.27	15.44
9/30/1985	14.91	14.84	14.64
12/31/1985	15.11	15.11	14.37
3/31/1986	14.42	14.42	14.05
6/30/1986	14.27	14.27	13.28
9/30/1986	13.26	13.26	13.09
12/31/1986	13.52	13.52	13.62
3/31/1987	12.90	12.90	12.61
6/30/1987	13.17	13.17	13.04
9/30/1987	13.14	13.14	12.70
12/31/1987	12.76	12.76	12.69
3/31/1988	12.74	12.74	12.94
6/30/1988	12.70	12.70	12.48
9/30/1988	12.78	12.78	12.79
12/31/1988	12.97	12.97	12.98
3/31/1989	13.02	13.02	12.99
6/30/1989	13.22	13.22	13.25
9/30/1989	12.38	12.38	12.56
12/31/1989	12.83	12.83	12.94
3/31/1990	12.62	12.62	12.68
6/30/1990	12.85	12.85	12.81
9/30/1990	12.54	12.54	12.36
12/31/1990	12.68	12.68	12.78
3/31/1991	12.66	12.66	12.69
6/30/1991	12.67	12.67	12.53
9/30/1991	12.49	12.49	12.43
12/31/1991	12.42	12.42	12.33
3/31/1992	no data	no data	no data
6/30/1992	11.83	11.83	11.98
9/30/1992	12.03	12.03	11.87
12/31/1992	12.14	12.14	11.94
3/31/1993	11.84	11.84	11.75
6/30/1993	11.64	11.64	11.71
9/30/1993	11.15	11.15	11.39
12/31/1993	11.04	11.04	11.16

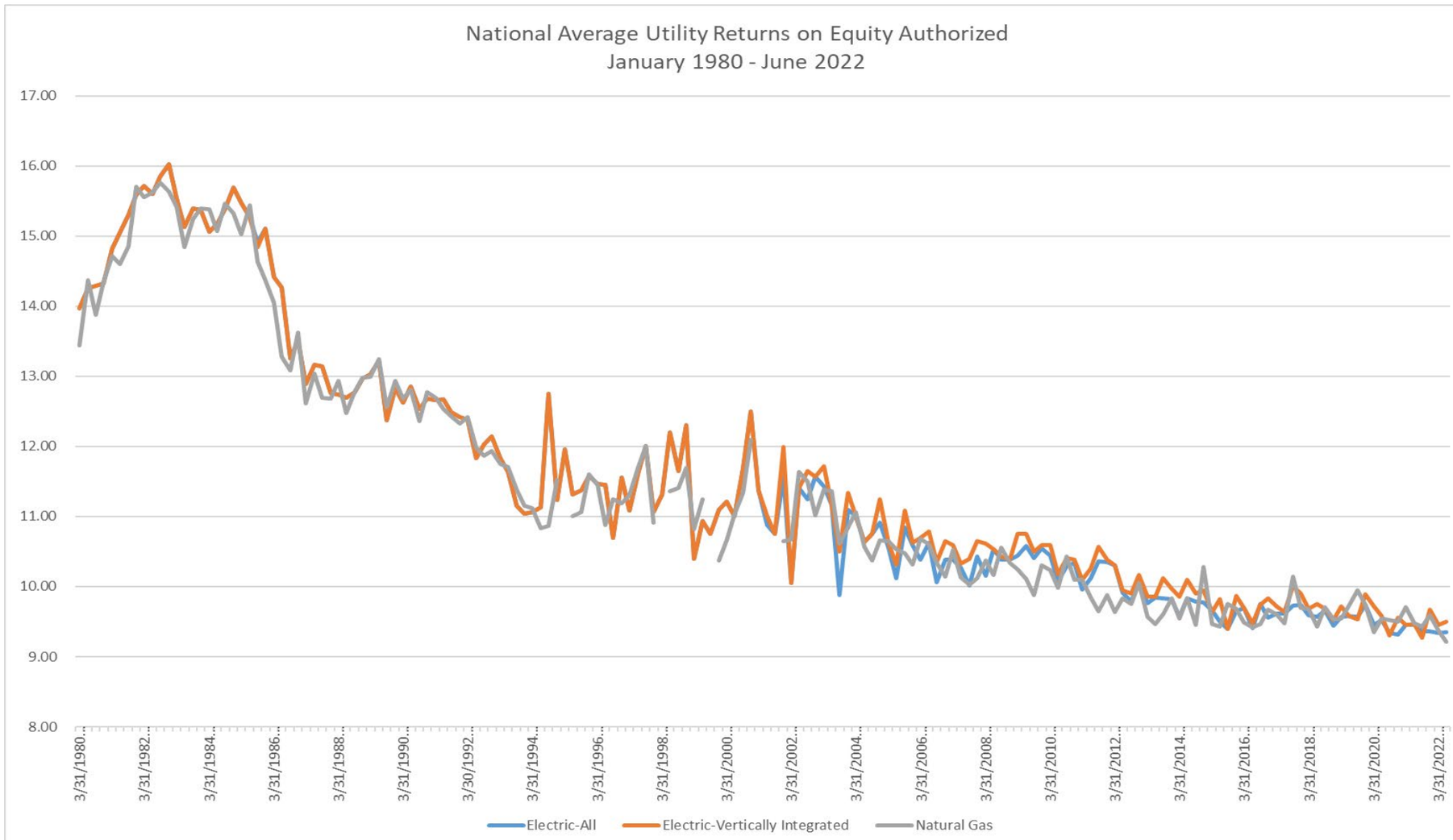
Quarter Ending	Electric: All	Electric: Vertically Integrated	Natural Gas
3/31/1994	11.07	11.07	11.12
6/30/1994	11.13	11.13	10.84
9/30/1994	12.75	12.75	10.87
12/31/1994	11.24	11.24	11.53
3/31/1995	11.96	11.96	no data
6/30/1995	11.32	11.32	11.00
9/30/1995	11.37	11.37	11.07
12/31/1995	11.58	11.58	11.61
3/31/1996	11.46	11.46	11.45
6/30/1996	11.46	11.46	10.88
9/30/1996	10.70	10.70	11.25
12/31/1996	11.56	11.56	11.19
3/31/1997	11.08	11.08	11.31
6/30/1997	11.62	11.62	11.70
9/30/1997	12.00	12.00	12.00
12/31/1997	11.06	11.06	10.92
3/31/1998	11.31	11.31	no data
6/30/1998	12.20	12.20	11.37
9/30/1998	11.65	11.65	11.41
12/31/1998	12.30	12.30	11.69
3/31/1999	10.40	10.40	10.82
6/30/1999	10.94	10.94	11.25
9/30/1999	10.75	10.75	no data
12/31/1999	11.10	11.10	10.38
3/31/2000	11.21	11.21	10.66
6/30/2000	11.00	11.00	11.03
9/30/2000	11.68	11.68	11.33
12/31/2000	12.50	12.50	12.10
3/31/2001	11.38	11.38	-
6/30/2001	10.88	11.00	10.75
9/30/2001	10.76	10.76	no data
12/31/2001	11.57	11.99	10.65
3/31/2002	10.05	10.05	10.67
6/30/2002	11.41	11.41	11.64
9/30/2002	11.25	11.65	11.50
12/31/2002	11.57	11.57	11.01
3/31/2003	11.43	11.72	11.38
6/30/2003	11.16	11.16	11.36
9/30/2003	9.88	10.50	10.61
12/31/2003	11.09	11.34	10.84
3/31/2004	11.00	11.00	11.06
6/30/2004	10.64	10.64	10.57
9/30/2004	10.75	10.75	10.37
12/31/2004	10.91	11.24	10.66
3/31/2005	10.56	10.63	10.65
6/30/2005	10.13	10.31	10.54
9/30/2005	10.85	11.08	10.47
12/31/2005	10.59	10.63	10.32
3/31/2006	10.38	10.70	10.68
6/30/2006	10.63	10.79	10.60
9/30/2006	10.06	10.35	10.34
12/31/2006	10.39	10.65	10.14
3/31/2007	10.39	10.59	10.52
6/30/2007	10.27	10.33	10.13
9/30/2007	10.02	10.40	10.03
12/31/2007	10.43	10.65	10.12

Quarter Ending	Electric: All	Electric: Vertically Integrated	Natural Gas
3/31/2008	10.15	10.62	10.38
6/30/2008	10.54	10.54	10.17
9/30/2008	10.38	10.43	10.55
12/31/2008	10.39	10.39	10.34
3/31/2009	10.45	10.75	10.24
6/30/2009	10.58	10.75	10.11
9/30/2009	10.41	10.50	9.88
12/31/2009	10.54	10.59	10.31
3/31/2010	10.45	10.59	10.24
6/30/2010	10.08	10.18	9.99
9/30/2010	10.29	10.40	10.43
12/31/2010	10.34	10.38	10.09
3/31/2011	9.96	10.09	10.10
6/30/2011	10.12	10.26	9.85
9/30/2011	10.36	10.57	9.65
12/31/2011	10.34	10.39	9.88
3/31/2012	10.30	10.30	9.63
6/30/2012	9.92	9.95	9.83
9/30/2012	9.78	9.90	9.75
12/31/2012	10.07	10.16	10.06
3/31/2013	9.77	9.85	9.57
6/30/2013	9.84	9.86	9.47
9/30/2013	9.83	10.12	9.60
12/31/2013	9.82	9.97	9.83
3/31/2014	9.57	9.86	9.54
6/30/2014	9.83	10.10	9.84
9/30/2014	9.79	9.90	9.45
12/31/2014	9.78	9.94	10.28
3/31/2015	9.66	9.64	9.47
6/30/2015	9.50	9.83	9.43
9/30/2015	9.40	9.40	9.75
12/31/2015	9.65	9.86	9.68
3/31/2016	9.70	9.70	9.48
6/30/2016	9.41	9.48	9.42
9/30/2016	9.76	9.74	9.47
12/31/2016	9.55	9.83	9.67
3/31/2017	9.61	9.72	9.60
6/30/2017	9.61	9.64	9.47
9/30/2017	9.73	10.00	10.14
12/31/2017	9.74	9.91	9.70
3/31/2018	9.59	9.69	9.68
6/30/2018	9.57	9.75	9.43
9/30/2018	9.66	9.69	9.71
12/31/2018	9.44	9.52	9.53
3/31/2019	9.57	9.72	9.55
6/30/2019	9.58	9.58	9.73
9/30/2019	9.57	9.53	9.95
12/31/2019	9.74	9.89	9.74
3/31/2020	9.45	9.72	9.35
6/30/2020	9.52	9.58	9.55
9/30/2020	9.34	9.30	9.52
12/31/2020	9.32	9.56	9.50
3/31/2021	9.45	9.45	9.71
6/30/2021	9.46	9.47	9.48
9/30/2021	9.37	9.27	9.43
12/31/2021	9.36	9.67	9.59

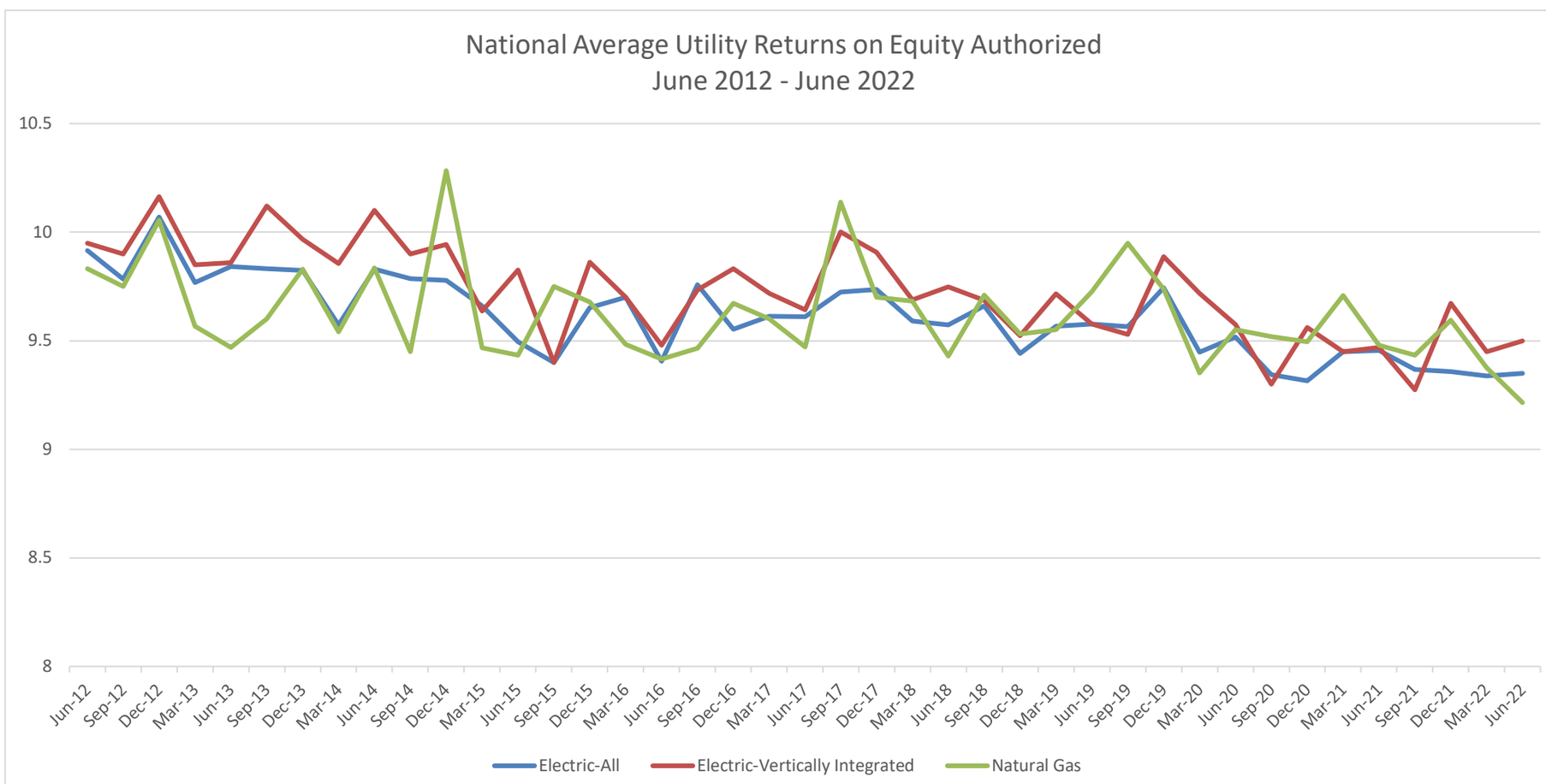
Quarter Ending	Electric: All	Electric: Vertically Integrated	Natural Gas
3/31/2022	9.34	9.45	9.38
6/30/2022	9.35	9.50	9.22

Source: S&P Global Market Intelligence

National Average Utility Returns on Equity Authorized
January 1980 - June 2022



National Average Utility Returns on Equity Authorized
January 2012 - June 2022



Source: S&P Global Market Intelligence

Wisconsin Public Service Corporation
History of PSCW Rate Case Decisions
1980 - Present

Company	Docket	Test Year End	Service Type	Order Date	Decision Type	Return on Equity	Common Equity Capital
Wisconsin Electric Power Co.	D-6630-ER-10	12/1980	Electric	10/9/1980	Fully Litigated	13.25	38.43
Wisconsin Electric Power Co.	D-6630-ER-12	12/1981	Electric	9/10/1981	Fully Litigated	14.50	37.18
Wisconsin Electric Power Co.	D-6630-ER-14	12/1982	Electric	1/13/1982	Fully Litigated	14.75	41.43
Wisconsin Public Service Corp.	6690-UR-17	12/1981	Electric & Natural Gas	5/21/1981	Fully Litigated	14.00	38.20
Wisconsin Public Service Corp.	6690-UR-18	12/1982	Electric & Natural Gas	4/27/1982	Fully Litigated	15.00	39.09
Wisconsin Public Service Corp.	6690-UR-19	12/1983	Electric & Natural Gas	3/24/1983	Fully Litigated	15.00	42.25
Wisconsin Public Service Corp.	6690-UR-20	12/1985	Electric & Natural Gas	1/31/1985	Fully Litigated	14.75	50.00
Wisconsin Public Service Corp.	6690-UR-101	12/1987	Electric & Natural Gas	7/10/1987	Fully Litigated	12.90	48.01
Wisconsin Public Service Corp.	6690-UR-102	12/1988	Electric & Natural Gas	1/29/1988	Fully Litigated	13.20	50.79
Wisconsin Public Service Corp.	6690-UR-103	12/1989	Electric & Natural Gas	1/27/1989	Fully Litigated	13.00	52.76
Wisconsin Public Service Corp.	6690-UR-104	12/1990	Electric & Natural Gas	12/21/1989	Fully Litigated	12.90	53.60
Wisconsin Public Service Corp.	6690-UR-105	12/1991	Electric & Natural Gas	12/18/1990	Fully Litigated	13.10	50.98
Wisconsin Public Service Corp.	6690-UR-106	12/1992	Electric & Natural Gas	12/19/1991	Fully Litigated	12.80	52.97
Wisconsin Public Service Corp.	6690-UR-107	12/1993	Electric & Natural Gas	12/22/1992	Fully Litigated	12.30	54.15
Wisconsin Public Service Corp.	6690-UR-108	12/1994	Electric & Natural Gas	12/21/1993	Fully Litigated	11.30	55.61
Wisconsin Public Service Corp.	6690-UR-109	12/1995	Electric & Natural Gas	12/19/1994	Fully Litigated	11.50	55.43
Wisconsin Public Service Corp.	6690-UR-110	12/1997	Electric & Natural Gas	2/20/1997	Fully Litigated	11.80	54.80
Wisconsin Public Service Corp.	6690-UR-111	12/1999	Electric & Natural Gas	12/17/1998	Fully Litigated	12.10	54.22
Wisconsin Public Service Corp.	6690-UR-112	12/2001	Electric & Natural Gas	11/30/2000	Fully Litigated	12.10	54.28
Wisconsin Public Service Corp.	6690-UR-113	12/2002	Electric & Natural Gas	6/20/2002	Fully Litigated	12.30	54.99
Wisconsin Public Service Corp.	6690-UR-114	12/2003	Electric & Natural Gas	3/20/2003	Fully Litigated	12.00	55.00
Wisconsin Public Service Corp.	6690-UR-115	12/2004	Electric & Natural Gas	12/19/2003	Fully Litigated	12.00	56.00
Wisconsin Public Service Corp.	6690-UR-116	12/2005	Electric & Natural Gas	12/21/2004	Fully Litigated	11.50	57.35
Wisconsin Public Service Corp.	6690-UR-117	12/2006	Electric & Natural Gas	12/22/2005	Fully Litigated	11.00	59.73
Wisconsin Public Service Corp.	6690-UR-118	12/2007	Electric & Natural Gas	1/11/2007	Fully Litigated	10.90	57.46
Wisconsin Public Service Corp.	6690-UR-119	12/2009	Electric & Natural Gas	12/30/2008	Settled	NA	53.41
Wisconsin Public Service Corp.	6690-UR-120	12/2011	Electric & Natural Gas	1/13/2011	Fully Litigated	10.30	51.65
Wisconsin Public Service Corp.	6690-UR-121	12/2013	Electric & Natural Gas	10/24/2012	Settled	10.30	51.61
Wisconsin Public Service Corp.	6690-UR-122	12/2014	Electric & Natural Gas	11/6/2013	Fully Litigated	10.20	50.14
Wisconsin Public Service Corp.	6690-UR-123	12/2015	Electric & Natural Gas	11/6/2014	Fully Litigated	10.20	50.28
Wisconsin Public Service Corp.	6690-UR-124	12/2016	Electric & Natural Gas	11/19/2015	Fully Litigated	10.00	50.47
Wisconsin Public Service Corp.	6690-UR-125	12/2019	Electric & Natural Gas	8/10/2017	Settled	NA	NA
Wisconsin Public Service Corp.	6690-UR-126	12/2020	Electric & Natural Gas	10/31/2019	Settled	10.00	51.96

Source: Public Service Commission of Wisconsin, S&P Global Market Intelligence
Note: Common stockholders' equity measured on basis of ratemaking capital structure

Public Service Commission of Wisconsin Cost of Capital Decisions

Major Investor Owned Utilities

Company	Docket Number	Order Date	Common Stock Equity		Preferred Stock Equity		Debt Capital		Weighted Cost of Capital	Economic Cost of Capital
			Percent of Capital	Rate of Return (%)	Percent of Capital	Cost (%)	Percent of Capital	Cost (%)	(%)	(%)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Superior Water, Light & Power Company	5820-UR-101	1-87	46.44	13.50	-	-	53.56	9.04	11.11	16.19
General Telephone Company	2180-TI-100	2-87	50.46	13.25 *	1.32	4.89	48.22	8.19	10.70	16.17
Northern States Power Company	4220-UI-101	2-87	61.09	11.25 *	-	-	38.91	8.20	10.06	15.62
Wisconsin Power and Light Company	6680-UR-102	3-87	48.85	13.00 *	7.60	6.36	43.55	8.54	10.55	14.96
Madison Gas and Electric Company	3270-UR-101	5-87	47.90	13.50	2.38	8.70	49.72	8.73	11.02	15.67
Wisconsin Public Service Corporation	6690-UR-101	7-87	48.01	12.90	8.17	6.69	43.82	8.38	10.41	14.82
Wisconsin Bell, Inc.	6720-TI-102	7-87	61.02	13.50	-	-	38.98	7.85	11.30	16.62
Wisconsin Fuel and Light Company	6640-GR-101	9-87	57.52	14.00	-	-	42.48	10.17	12.37	17.56
Wisconsin Natural Gas Company	6670-GR-102	9-87	52.49	13.50	-	-	47.51	8.00	10.89	15.46
Wisconsin Southern Gas Company	6710-GR-102	10-87	53.16	14.00	2.25	8.63	44.59	10.61	12.36	17.28
GTE North, Inc.	2180-TR-100	12-87	54.91	13.25	1.70	5.42	43.39	7.91	10.80	15.55
Superior Water, Light & Power Company	5820-UR-102	12-87	47.06	13.50	-	-	52.94	9.04	11.14	15.24
Wisconsin Electric Power Company	6630-UR-101	12-87	51.68	13.00	4.83	5.90	43.49	8.62	10.75	15.27
Northern States Power Company	4220-UR-101	12-87	58.57	12.00	-	-	41.43	8.69	10.63	15.15
AT&T Communications of Wisconsin	265-TR-103	12-87	100.00	10.93	-	-	-	-	10.93	17.98
Wisconsin Public Service Corporation	6690-UR-102	1-88	50.79	13.20	8.15	6.59	41.06	8.43	10.70	15.37
Madison Gas and Electric Company	3270-UR-102	6-88	48.09	13.50	2.21	8.70	49.70	8.69	11.00	15.31
Wisconsin Natural Gas Company	6670-GR-102	9-88	51.17	13.65	-	-	48.83	8.21	10.99	15.49
Wisconsin Power and Light Company	6680-UR-103	10-88	49.52	13.10	7.52	6.36	42.96	8.50	10.62	15.12
Wisconsin Fuel and Light Company	6640-GR-102	12-88	57.35	13.75	-	-	42.65	10.06	12.13	17.22
GTE North, Inc.	2180-TR-101	12-88	57.57	13.50	1.62	5.43	40.81	8.01	11.13	16.20
Wisconsin Southern Gas Company	6710-GR-103	12-88	57.97	13.75	-	-	42.03	10.37	12.33	17.47
Wisconsin Electric Power Company	6630-UR-102	12-88	53.55	13.10	4.70	5.90	41.75	8.58	10.88	15.59
Wisconsin Public Service Corporation	6690-UR-103	1-89	52.76	13.00	7.82	6.48	39.42	8.50	10.72	15.47
Wisconsin Gas Company	6650-GR-105	1-89	45.93	13.90	-	-	54.07	9.60	11.57	15.69
Madison Gas and Electric Company	3270-UR-103	6-89	47.81	13.50	1.97	8.70	50.22	9.02	11.15	15.42
Wisconsin Bell, Inc.	6720-TR-103	8-89	61.20	14.00	-	-	38.80	7.49	11.48	17.01
Superior Water, Light & Power Company	5820-UR-103	8-89	48.83	13.50	-	-	51.17	9.12	11.26	15.51
Wisconsin Natural Gas Company	6670-GR-104	9-89	52.49	13.60	-	-	47.51	8.27	11.07	
Wisconsin Southern Gas Company	6710-UR-104	10-89	55.63	13.60	-	-	44.37	10.37	12.18	17.06
Wisconsin Gas Company	6650-UR-106	11-89	49.41	13.60	-	-	50.59	9.63	11.59	15.92
Wisconsin Power and Light Company	6680-UR-104	11-89	49.50	13.00	7.39	6.36	43.11	8.60	10.62	
Wisconsin Public Service Corporation	6690-UR-104	12-89	53.60	12.90	7.56	6.37	38.84	8.44	10.67	15.44
Northern States Power Company	4220-UR-103	12-89	56.61	12.50	-	-	43.39	8.37	10.94	15.51
Wisconsin Electric Power Company	6630-UR-103	1-90	54.18	12.90	4.63	5.90	41.19	8.57	10.79	15.47
Madison Gas and Electric Company	3270-UR-104	6-90	51.37	13.20	1.95	8.70	46.68	8.98	11.14	15.62
Wisconsin Bell, Inc.	6720-TR-104	9-90	61.25	13.75 **	-	-	38.75	7.46	11.31	16.74
Wisconsin Fuel & Light Company	6640-GR-103	9-90	51.70	13.60	-	-	48.30	9.94	11.83	16.37
Wisconsin Public Service Corporation	6690-UR-105	12-90	50.98	13.10	7.01	6.32	42.01	8.64	10.75	15.34
Superior Water, Light & Power Company	5820-UR-104	1-91	54.80	13.25	-	-	45.20	8.25	10.99	15.67
Wisconsin Electric Power Company	6630-UR-104	1-91	53.57	13.10	4.54	5.90	41.89	8.57	10.88	15.41
Northern States Power Company	4220-UR-104	1-91	58.62	12.75	-	-	41.38	8.87	11.14	15.94
GTE North, Inc.	2180-TR-102	2-91	58.64	13.50	1.48	5.46	39.88	8.32	11.32	16.48
Wisconsin Natural Gas Company	6670-GR-106	8-91	52.73	13.30	-	-	47.28	8.54	11.05	15.57
Wisconsin Gas Company	6650-GR-109	11-91	49.09	13.40	-	-	50.91	9.42	11.37	15.61
Wisconsin Southern Gas Company	6710-GR-106	11-91	48.93	13.50	-	-	51.07	9.81	11.62	15.88
Wisconsin Public Service Corporation	6690-UR-106	12-91	52.97	12.80	6.52	6.32	40.51	8.37	10.58	15.22

Northern States Power Company	4220-UR-105	12-91	57.08	12.60	-	-	42.92	8.76	10.95	15.57
Wisconsin Electric Power Company	6630-UR-105	1-92	52.56	12.80	4.23	5.90	43.21	8.50	10.65	15.15
Madison Gas and Electric Company	3270-UR-105	4-92	53.36	12.90 *	1.80	8.70	44.84	8.61	10.90	15.45
Wisconsin Gas Company	6650-GR-110	10-92	49.45	12.75	-	-	50.55	8.90	10.80	14.86
Wisconsin Natural Gas Company	6670-GR-107	10-92	53.69	12.75	-	-	46.31	7.58	10.37	14.79
Wisconsin Power and Light Company	6680-UR-107	12-92	49.53	12.40	6.40	6.36	44.07	7.70	9.94	14.17
Wisconsin Public Service Corporation	6690-UR-107	12-92	54.15	12.30	6.41	6.32	39.45	8.26	10.32	14.87

Public Service Commission of Wisconsin Cost of Capital Decisions

Major Investor Owned Utilities

			Common Stock Equity		Preferred Stock Equity		Debt Capital		Weighted	Economic
			Percent of	Rate of Return	Percent of	Cost	Percent of	Cost	Cost of	Cost of
Company	Docket Number	Order Date	Capital	(%)	Capital	(%)	Capital	(%)	Capital (%)	Capital (%)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Northern States Power Company	4220-UR-106	1-93	56.94	12.00	-	-	43.06	8.40	10.44	14.84
Wisconsin Electric Power Company	6630-UR-106	2-93	51.19	12.30	3.72	5.89	45.09	8.17	10.21	14.42
GTE North, Inc.	2180-TR-103	3-93	60.08	12.75	1.32	5.49	38.60	8.29	10.93	15.92
Superior Water, Light & Power Company	5820-UR-105	5-93	55.28	12.60	-	-	44.72	8.34	10.70	15.20
Madison Gas and Electric Company	3270-UR-106	6-93	50.66	12.00	1.62	8.70	47.72	7.40	9.75	13.76
Wisconsin Natural Gas Company	6670-GR-108	8-93	51.12	11.90	-	-	48.88	6.29	9.15	13.07
Wisconsin Electric Power Company	6630-UR-107	8-93	52.13	11.80 **	3.45	5.88	44.41	7.90	9.86	13.96
Wisconsin Power and Light Company	6680-UR-108	10-93	50.31	11.60	5.87	6.36	43.82	7.07	9.31	13.32
Wisconsin Fuel & Light Company	6640-GR-105	10-93	45.98	12.65	-	-	54.02	8.51	10.41	14.16
Wisconsin Gas Company	6650-GR-111	12-93	48.43	11.80	-	-	51.57	7.15	9.40	13.08
Northern States Power Company	4220-UR-107	12-93	54.91	11.40	-	-	45.09	6.98	9.60	13.63
Wisconsin Public Service Corporation	6690-UR-108	12-93	55.61	11.30	6.37	6.08	38.02	7.81	9.64	14.11
Wisconsin Power and Light Company	6680-UR-109	12-94	51.93	11.50	5.58	5.52	42.49	7.48	9.46	13.67
Madison Gas and Electric Company	3270-UR-107	12-94	53.89	11.70	1.48	8.70	44.63	7.45	9.76	14.08
Wisconsin Public Service Corporation	6690-UR-109	12-94	55.43	11.50	6.35	6.08	38.22	7.83	9.75	14.28
Wisconsin Electric Power Company	6630-UR-108	9-95	54.57	11.30 *	0.96	3.95	44.47	7.72	9.64	13.93
Wisconsin Fuel & Light Company	6640-GR-106	10-95	45.50	11.90	7.04	6.00	47.46	8.62	9.92	13.68
Northern States Power Company	4220-UR-108	12-95	54.99	11.30	-	-	45.01	7.46	9.57	13.73
Superior Water, Light & Power Company	5820-UR-106	3-96	52.09	11.60	-	-	47.91	7.76	9.76	13.66
Northern States Power Company	4220-UR-109	12-96	55.00	11.30	-	-	45.00	7.40	9.55	13.72
Wisconsin Electric Power Company	6630-UR-109	2-97	53.35	11.80	0.94	3.95	45.71	7.29	9.67	13.86
Wisconsin Public Service Corporation	6690-UR-110	2-97	54.80	11.80	6.45	6.08	38.75	7.35	9.71	14.31
Wisconsin Power and Light Company	6680-UR-110	4-97	52.00	11.70	5.44	5.52	42.56	7.40	9.53	13.81
Madison Gas and Electric Company	3270-UR-108	7-97	53.01	12.00	-	-	47.00	7.24	9.76	14.02
Wisconsin Electric Power Company	6630-UR-110	4-98	53.14	12.20	0.90	3.95	45.96	6.98	9.72	14.03
Northern States Power Company	4220-UR-110	9-98	54.996	11.90	-	-	45.004	7.08	9.72	14.10
Madison Gas and Electric Company	3270-UR-109	1-99	53.35	12.20	-	-	46.65	7.23	9.88	14.24
Wisconsin Public Service Corporation	6690-UR-111	1-99	54.22	12.10	5.85	6.08	39.93	7.10	9.76	14.40
Northern States Power Company	4220-UR-111	10-99	54.978	11.90 *	-	-	45.022	7.18	9.77	14.15
Wisconsin Electric Power Company	6630-UR-111	8-00	53.45	12.20	0.86	3.95	45.69	7.05	9.77	14.10
Madison Gas and Electric Company	3270-UR-110	12-00	50.69	12.90	-	-	49.31	7.29	10.14	14.52
Wisconsin Public Service Corporation	6690-UR-112	12-00	54.28	12.10	4.77	6.08	40.95	7.06	9.74	14.34
Superior Water, Light & Power Company	5820-UR-107	9-01	52.76	12.25	-	-	47.24	6.95	9.74	14.07
Wisconsin Public Service Corporation	6690-UR-113	6-02	54.99	12.30	4.50	6.08	40.51	6.64	9.71	14.42

Wisconsin Power and Light Company	6680-UR-111	9-02	44.67	12.30	4.19	5.52	51.14	6.05	8.81	12.64
Port Washington Generating Station	05-CE-117	12-02		12.70						
Madison Gas and Electric Company	3270-UR-111	2-03	55.42	12.30	-	-	44.58	6.50	9.71	14.28
Wisconsin Public Service Corporation	6690-UR-114	3-03	55.00	12.00	4.33	6.08	40.67	5.86	9.24	13.84
Wisconsin Power and Light Company	6680-UR-112	4-03	51.72	12.00	4.02	5.52	44.26	5.89	9.04	13.35
Superior Water, Light & Power Company	5820-UR-108	5-03	52.10	12.25	-	-	47.90	5.97	9.23	13.51
West Campus Cogeneration Project	05-CE-121	10-03		12.10						
Elm Road Generating Station	05-AE-118 / 05-CE-130	11-03		12.70						
Wisconsin Power and Light Company	6680-UR-113	12-03	60.27	12.00	4.11	5.52	35.62	5.70	9.50	14.50
Wisconsin Public Service Corporation	6690-UR-115	12-03	56.00	12.00	3.91	6.08	40.09	5.59	9.20	13.87
Madison Gas and Electric Company	3270-UR-112	1-04	55.91	12.00	-	-	44.10	6.02	9.37	13.87
Wisconsin Public Service Corporation	6690-UR-116	12-04	57.35	11.50	3.25	6.08	39.40	5.30	8.89	13.45
Madison Gas and Electric Company	3270-UR-113	12-04	57.64	11.50	-	-	42.36	6.03	9.18	13.62
Superior Water, Light & Power Company	5820-UR-109	5-05	54.53	11.70	-	-	45.47	6.21	9.20	13.48
Sheboygan Falls Facility	6680-CE-168	5-05		10.90						
Wisconsin Power and Light Company	6680-UR-114	7-05	61.75	11.50	4.04	5.52	34.21	6.10	9.41	14.32
Madison Gas and Electric Company	3270-UR-114	12-05	56.65	11.00	-	-	43.35	6.12	8.88	13.06
Wisconsin Public Service Corporation	6690-UR-117	12-05	59.73	11.00	3.41	6.08	36.86	5.53	8.82	13.37
Northern States Power Company	4220-UR-114	1-06	53.660	11.00	-	-	46.340	6.55	8.94	12.90
Wisconsin Electric Power Company	05-UR-102	1-06	56.34	11.20	0.73	3.95	42.93	5.08	8.52	12.71
Wisconsin Gas Company	05-UR-102	1-06	50.20	11.20	-	-	49.80	5.36	8.29	12.06
Superior Water, Light & Power Company	5820-UR-110	12-06	55.00	11.10	-	-	45.00	6.62	9.08	13.18
Wisconsin Public Service Corporation	6690-UR-118	1-07	57.46	10.90	2.74	6.08	39.80	5.52	8.63	12.94
Wisconsin Power and Light Company	6680-UR-115	1-07	54.13	10.80	3.83	5.52	42.04	6.24	8.68	12.74
Cedar Ridge Wind	6680-CE-171	5-07		10.50						
Madison Gas and Electric Company	3270-UR-115	12-07	57.36	10.80	-	-	42.64	6.00	8.75	12.90
Northern States Power Company	4220-UR-115	1-08	52.51	10.75	-	-	47.49	6.23	8.60	12.38
Wisconsin Electric Power Company	05-UR-103	1-08	54.36	10.75	0.72	3.95	44.92	5.46	8.33	12.22
Wisconsin Gas Company	05-UR-103	1-08	46.64	10.75	-	-	53.36	5.45	7.29	11.27
Wisconsin Public Service Corporation	6690-UR-119	12-08	-	- *	-	-	-	-	-	-
Wisconsin Power and Light Company	6680-UR-116	12-08	-	- *	-	-	-	-	-	-
Superior Water, Light & Power Company	5820-UR-111	12-08	55.05	11.10	-	-	44.95	6.26	8.92	13.02

Public Service Commission of Wisconsin Cost of Capital Decisions

Major Investor Owned Utilities

			Common Stock Equity		Preferred Stock Equity		Debt Capital		Weighted	Economic
			Percent of	Rate of Return	Percent of	Cost	Percent of	Cost	Cost of	Cost of
Company	Docket Number	Order Date	Capital	(%)	Capital	(%)	Capital	(%)	Capital (%)	Capital (%)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Wisconsin Power and Light Company	6680-UR-117	12-09	50.38	10.40	2.45	5.52	47.17	5.94	8.18	11.79
Wisconsin Electric Power Company	05-UR-104	12-09	53.02	10.40	0.60	3.95	46.38	4.96	7.83	11.53
Wisconsin Gas Company	05-UR-104	12-09	46.62	10.50	-	-	53.38	3.93	6.99	10.27
Northern States Power Company	4220-UR-116	12-09	52.30	10.40	-	-	47.70	5.96	8.28	11.93
Madison Gas and Electric Company	3270-UR-116	12-09	55.34	10.40	-	-	44.66	5.05	8.02	11.88
Superior Water, Light, & Power Company	5820-UR-112	12-10	54.93	10.90	-	-	45.07	5.82	8.62	12.63
Wisconsin Public Service Corporation	6690-UR-120	1-11	51.65	10.30	2.69	6.08	45.66	5.28	7.90	11.56

Madison Gas & Electric Company	3270-UR-117	1-11	58.06	10.30	-	-	41.94	5.79	8.41	12.42
Wisconsin Electric Power Company	05-UR-105	11-11	-	- ^	-	-	-	-	-	-
Wisconsin Gas Company	05-UR-105	11-11	-	- ^	-	-	-	-	-	-
Northern States Power Company	4220-UR-117	12-11	52.59	10.40	-	-	47.41	5.48	8.07	11.74
Wisconsin Power and Light Company	6680-UR-118	7-12	-	10.40 ^^	-	-	-	-	-	-
Superior Water, Light, & Power Company	5820-UR-113	11-12	55.29	10.90	-	-	44.71	5.45	8.46	12.51
Wisconsin Public Service Corporation	6690-UR-121	12-12	51.61	10.30	2.51	6.08	45.88	4.71	7.63	11.18
Madison Gas & Electric Company	3270-UR-118	12-12	59.09	10.30	-	-	40.91	4.92	8.10	12.18
Wisconsin Electric Power Company	05-UR-106	12-12	52.09	10.40	0.51	3.95	47.40	4.79	7.71	11.34
Wisconsin Gas Company	05-UR-106	12-12	46.75	10.50	-	-	53.25	3.74	6.90	10.19
Northern States Power Company	4220-UR-118	12-12	52.37	10.40	-	-	47.63	5.37	8.01	11.66
Wisconsin Public Service Corporation	6690-UR-122	12-13	50.14	10.20	1.94	6.08	47.92	4.53	7.40	10.91
Northern States Power Company	4220-UR-119	12-13	52.54	10.20	-	-	47.46	5.42	7.93	11.52
Wisconsin Public Service Corporation	6690-UR-123	12-14	50.28	10.20	1.87	6.08	47.85	4.59	7.44	10.95
Madison Gas and Electric Company	3270-UR-120	12-14	58.96	10.20 *	-	-	41.04	4.78	7.97	12.00
Wisconsin Electric Power Company	5-UR-107	12-14	51.90	10.20 *	0.48	3.95	47.62	4.40	7.40	10.94
Wisconsin Gas Company	5-UR-107	12-14	48.91	10.30 *	-	-	51.09	3.69	6.92	10.30
Wisconsin Public Service Corporation	6690-UR-124	12-15	50.47	10.00	1.78	6.08	47.75	4.47	7.29	10.75
Northern States Power Company	4220-UR-121	12-15	52.49	10.00	-	-	47.51	4.74	7.50	11.02
Madison Gas and Electric Company	3270-UR-121	12-16	57.16	9.80	-	-	42.84	4.87	7.49	11.24
Wisconsin Power and Light Company	6680-UR-120	12-16	52.20	10.00 *	-	-	47.80	4.92	7.57	11.07
Superior Water, Light, & Power Company	5820-UR-114	8-17	55.08	10.50	-	-	44.92	4.31	7.72	11.37
Northern States Power Company	4220-UR-123	12-17	51.45	9.80	-	-	48.55	4.65	7.30	10.68
Wisconsin Public Service Corporation	6690-UR-125	12-17	50.47	10.00 ^^	1.78	6.08	47.75	4.47	7.29	10.75
Wisconsin Power and Light Company	6680-UR-121	12-18	52.00	10.00 *	-	-	48.00	4.73	7.47	9.42
Madison Gas and Electric Company	3270-UR-122	12-18	55.00	9.80 *	-	-	45.00	4.60	7.46	9.48
Superior Water, Light, & Power Company	5820-UR-114	12-18	54.89	10.40			41.69	3.43	7.77	9.91
Wisconsin Electric Power Company	5-UR-109	12-19	54.56	10.00 *	0.45	3.95	44.99	4.49	7.49	9.54
Wisconsin Gas Company	5-UR-109	12-19	52.02	10.20 *	-	-	47.98	4.19	7.32	9.30
Wisconsin Public Service Corporation	6690-UR-126	12-19	52.50	10.00 *	-	-	46.87	4.22	7.22	9.17
Northern States Power Company	4220-UR-124	12-19	52.52	10.00 *	-	-	47.48	4.51	7.40	9.37
Wisconsin Power and Light Company	6680-UR-122	12-20	52.53	10.00 *	-	-	47.48	4.60	7.44	9.40
Madison Gas and Electric Company	3270-UR-123	12-20	55.84	9.80 *			39.39	4.77	7.21	9.26
Wisconsin Power and Light Company	6680-UR-123	12-21	52.50	10.00 *	-	-	43.30	4.21	7.25	9.26
Madison Gas and Electric Company	3270-UR-124	12-21	55.63	9.80 *			42.02	4.33	7.29	9.33

* Settlement decision
** Three-Year Plan.
*** Settlement decision. ROE does not include forecasted $25 million revenue shortfall.
^ Alternative Approach
^^ Rate freeze with earnings capped and shared.
Note: Common stockholders' equity measured on a financial capital structure basis

Interest Rate Premium Analysis

	U.S. Average Authorized ROE			Debt Security Yields (%)										ROE Spreads (Basis Points)											
				U.S. Treasuries		Moody's Seasoned Public Utility Bonds				Moody's Seasoned Corporate Bonds				ROE - US10Y		ROE - US30Y		ROE - AA Utility Bonds		ROE - A Utility Bonds		ROE - Baa Utility Bonds		ROE - Baa Corporates	
Year	Electric: All	Electric: Vertically Integrated	Natural Gas	10Y	30Y	Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas
1985	15.18	15.17	14.73	10.62	10.79	-	12.06	12.47	12.96	11.37	-	-	-	455	411	439	395	311	267	271	227	221	177	-	-
1986	13.99	13.99	13.52	7.67	7.78	8.92	9.30	9.58	10.00	9.02	-	-	10.39	632	585	620	573	469	422	441	394	398	351	360	313
1987	12.98	12.98	12.72	8.39	8.59	9.52	9.77	10.10	10.53	9.39	-	-	10.58	459	433	439	414	321	295	289	263	245	219	240	214
1988	12.80	12.80	12.86	8.85	8.96	10.05	10.26	10.49	11.00	9.71	-	-	10.83	395	401	384	389	254	260	231	237	180	186	197	203
1989	12.97	12.97	12.87	8.49	8.45	9.32	9.56	9.77	9.98	9.25	-	-	10.18	447	438	452	443	341	332	319	310	299	290	279	270
1990	12.70	12.70	12.68	8.55	8.61	9.45	9.65	9.86	10.06	9.32	-	-	10.36	414	413	409	407	304	303	283	282	264	262	234	233
1991	12.54	12.54	12.45	7.86	8.14	8.85	9.09	9.36	9.55	8.77	-	-	9.80	468	459	441	431	345	335	319	309	299	290	274	265
1992	12.09	12.09	12.02	7.01	7.67	8.12	8.45	8.58	8.75	8.14	8.37	8.51	8.97	508	501	443	435	364	357	351	344	334	326	312	304
1993	11.47	11.47	11.38	5.87	6.59	7.29	7.43	7.59	7.90	7.21	7.40	7.58	7.92	561	552	488	479	404	395	388	379	357	348	355	346
1994	11.21	11.21	11.24	7.09	7.37	8.06	8.19	8.30	8.62	7.97	8.15	8.28	8.63	413	416	384	387	302	305	291	295	259	262	258	262
1995	11.58	11.58	11.44	6.57	6.88	7.67	7.77	7.89	8.28	7.59	7.72	7.83	8.20	500	486	470	456	381	367	369	355	330	315	338	324
1996	11.40	11.40	11.12	6.44	6.71	7.49	7.57	7.75	8.17	7.37	7.55	7.69	8.06	496	467	470	441	383	355	365	337	324	295	335	306
1997	11.34	11.34	11.30	6.35	6.61	7.43	7.54	7.60	7.96	7.26	7.47	7.53	7.87	499	495	474	469	380	376	375	370	339	334	348	343
1998	11.77	11.77	11.51	5.26	5.58	6.77	6.91	7.04	7.26	6.53	6.80	6.93	7.22	650	625	619	593	486	460	472	446	450	425	454	429
1999	10.72	10.72	10.74	5.65	5.87	7.21	7.51	7.63	7.88	7.05	7.36	7.53	7.88	508	510	485	487	321	323	310	311	284	286	285	287
2000	11.58	11.58	11.34	6.03	5.94	7.88	8.06	8.25	8.36	7.62	7.83	8.11	8.37	555	531	564	540	352	327	333	309	322	298	321	297
2001	11.07	11.16	10.96	5.02	5.49	7.47	7.58	7.76	8.02	7.08	7.26	7.67	7.95	613	594	566	547	358	338	339	320	313	294	321	301
2002	11.21	11.27	11.17	4.61	5.43	-	7.19	7.37	8.02	6.49	6.93	7.18	7.80	666	655	584	574	408	397	390	379	325	315	347	336
2003	10.96	11.36	10.99	4.01	-	-	6.39	6.58	6.84	5.66	6.14	6.38	6.76	735	697	-	-	497	459	479	441	452	415	460	422
2004	10.81	10.89	10.63	4.27	-	-	6.04	6.16	6.39	5.63	5.90	6.07	6.39	661	636	-	-	485	460	473	448	449	424	449	424
2005	10.51	10.63	10.41	4.29	-	-	5.44	5.64	5.92	5.23	5.38	5.60	6.06	635	613	-	-	519	497	499	477	471	449	457	435
2006	10.34	10.63	10.40	4.80	4.91	-	5.84	6.07	6.32	5.59	5.81	6.09	6.48	584	561	572	549	479	456	456	433	431	408	415	392
2007	10.32	10.50	10.22	4.63	4.84	-	5.94	6.07	6.32	5.56	5.90	6.09	6.48	587	559	566	539	456	429	443	415	418	390	402	374
2008	10.39	10.51	10.39	3.66	4.28	-	6.18	6.52	7.21	5.63	6.09	6.58	7.44	684	673	623	611	432	421	399	387	329	318	307	295
2009	10.53	10.66	10.22	3.26	4.08	-	5.75	6.04	7.05	5.31	5.74	6.14	7.29	740	695	658	614	491	447	462	418	361	317	337	292
2010	10.29	10.42	10.15	3.22	4.25	-	5.23	5.46	5.96	4.94	5.18	5.44	6.04	721	693	617	590	519	492	496	468	446	419	438	411
2011	10.19	10.33	9.91	2.78	3.91	-	4.79	5.05	5.57	4.64	4.77	5.06	5.66	755	713	642	600	555	513	529	486	476	434	467	425
2012	10.02	10.10	9.93	1.80	2.92	-	3.83	4.13	4.86	3.67	3.81	4.16	4.94	830	813	718	701	627	610	597	580	524	507	516	499
2013	9.82	9.95	9.68	2.35	3.45	-	4.24	4.47	4.98	4.23	4.29	4.50	5.10	760	733	650	623	570	544	547	520	497	470	485	458
2014	9.76	9.94	9.78	2.54	3.34	-	4.19	4.28	4.80	4.16	4.22	4.34	4.85	740	724	660	644	575	560	566	550	514	499	509	493
2015	9.60	9.75	9.60	2.14	2.84	-	4.00	4.13	5.04	3.90	4.01	4.19	5.01	761	746	691	675	575	559	562	547	471	456	474	459
2016	9.60	9.77	9.53	1.84	2.59	-	3.72	3.93	4.67	3.66	3.74	3.95	4.71	793	769	717	694	604	581	584	561	510	486	506	482
2017	9.68	9.80	9.73	2.33	2.89	-	3.82	4.00	4.38	3.74	3.83	4.00	4.44	747	740	691	684	598	591	580	573	543	535	536	529
2018	9.56	9.70	9.59	2.91	3.11	-	4.09	4.25	4.67	3.93	4.08	4.25	4.80	679	668	659	648	561	550	545	534	503	492	490	479
2019	9.61	9.68	9.74	2.14	2.58	-	3.60	3.76	4.19	3.39	3.53	3.76	4.37	754	760	710	716	607	614	591	598	549	555	530	537
2020	9.41	9.54	9.48	0.89	1.56	-	2.79	3.02	3.39	2.47	2.64	2.97	3.61	865	859	798	792	675	669	652	646	615	609	593	587
2021	9.41	9.47	9.55	1.45	2.06	-	2.96	3.11	3.36	2.71	2.85	3.04	3.40	802	811	741	750	650	659	636	645	611	619	607	616
2022 YTD	**9.34**	**9.48**	**9.30**	**2.40**	**2.62**	**-**	**3.94**	**4.11**	**4.41**	**2.70**	**3.76**	**4.03**	**4.44**	**707**	**689**	**685**	**667**	**554**	**536**	**536**	**518**	**506**	**488**	**503**	**485**
Averages																									
1985-1989	13.58	13.58	13.34	8.81	8.91	9.45	10.19	10.48	10.89	9.75	-	-	10.49	478	454	467	443	339	315	310	286	269	245	-	-
1990-1994	12.00	12.00	11.95	7.28	7.68	8.35	8.56	8.74	8.98	8.28	7.97	8.12	9.14	473	468	433	428	344	339	327	322	302	298	287	282
1995-1999	11.36	11.36	11.22	6.06	6.33	7.31	7.46	7.58	7.91	7.16	7.38	7.50	7.84	531	516	503	489	390	376	378	364	345	331	352	338
2000-2004	11.13	11.25	11.02	4.79	5.62	7.68	7.05	7.22	7.53	6.50	6.81	7.08	7.45	646	623	571	553	420	396	403	379	373	349	380	356
2005-2009	10.42	10.59	10.33	4.13	4.53	-	5.83	6.07	6.57	5.46	5.78	6.10	6.75	646	620	605	578	476	450	452	426	402	376	384	358
2010-2014	10.01	10.15	9.89	2.54	3.57	-	4.46	4.68	5.23	4.33	4.46	4.70	5.32	761	735	657	632	569	543	547	521	492	466	483	457
2015-2019	9.61	9.74	9.64	2.27	2.80	-	3.85	4.01	4.59	3.72	3.84	4.03	4.67	747	737	693	683	589	579	573	563	515	505	507	497
2020-2022	9.39	9.49	9.44	1.58	2.08	-	3.23	3.41	3.72	2.63	3.08	3.34	3.81	791	786	742	736	626	621	608	603	577	572	568	563
													Average Interest Rate Premium: January 2012 - June 2022	**767**	**756**	**702**	**690**	**600**	**588**	**582**	**570**	**531**	**520**	**523**	**511**
													Weigted Average Interest Rate Premium: January 2018 - June 2022	**772**	**767**	**727**	**722**	**612**	**607**	**595**	**590**	**563**	**558**	**555**	**550**

SOURCES: S&P Capital IQ, Federal Reserve Statistical Release, Blue Chip Financial Forecast, and Mergent's Bond Record

Interest Rate Premium Analysis

	U.S. Average Authorized ROE				Debt Security Yields (%)											ROE Spreads (Basis Points)													
					U.S. Treasuries			Moody's Seasoned Public Utility Bonds				Moody's Seasoned Corporate Bonds				ROE - US10Y		ROE - US30Y		ROE - AA Utility Bonds		ROE - A Utility Bonds		ROE - Baa Utility Bonds		ROE - Baa Corporates	
Year	Electric: All	Electric: Vertically Integrated	Natural Gas		10Y	30Y		Aaa	Aa	A	Baa	Aaa	Aa	A	Baa	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas	V.I. Electric	Gas
Averages																													
1985-1989	13.58	13.58	13.34	0	8.81	8.91	0	9.45	10.19	10.48	10.89	0	9.75	-	-	10.49	0	478	454	#	467	443	#	339	315	#	310	286	#
1990-1994	12.00	12.00	11.95	0	7.28	7.68	0	8.35	8.56	8.74	8.98	0	8.28	7.97	8.12	9.14	0	473	468	#	433	428	#	344	339	#	327	322	#
1995-1999	11.36	11.36	11.22	0	6.06	6.33	0	7.31	7.46	7.58	7.91	0	7.16	7.38	7.50	7.84	0	531	516	#	503	489	#	390	376	#	378	364	#
2000-2004	11.13	11.25	11.02	0	4.79	5.62	0	7.68	7.05	7.22	7.53	0	6.50	6.81	7.08	7.45	0	646	623	#	571	553	#	420	396	#	403	379	#
2005-2009	10.42	10.59	10.33	0	4.13	4.53	0	-	5.83	6.07	6.57	0	5.46	5.78	6.10	6.75	0	646	620	#	605	578	#	476	450	#	452	426	#
2010-2014	10.01	10.15	9.89	0	2.54	3.57	0	-	4.46	4.68	5.23	0	4.33	4.46	4.70	5.32	0	761	735	#	657	632	#	569	543	#	547	521	#
2015-2019	9.61	9.74	9.64	0	2.27	2.80	0	-	3.85	4.01	4.59	0	3.72	3.84	4.03	4.67	0	747	737	#	693	683	#	589	579	#	573	563	#
2020-2022	9.39	9.49	9.44		1.58	2.08		-	3.23	3.41	3.72		2.63	3.08	3.34	3.81		791	786		742	736		626	621	#	608	603	#
Average Interest Rate Premium: January 2012 - June 2022																		**767**	**756**	**#**	**702**	**690**	**#**	**600**	**588**	**#**	**582**	**570**	**#**
Weigted Average Interest Rate Premium: January 2018 - June 2022																		**772**	**767**	**#**	**727**	**722**	**#**	**612**	**607**	**#**	**595**	**590**	**#**
Blue Chip Forecast - June 2022					3.40	3.58										5.78		3.40	3.40		3.58	3.58							
IHS Markit/Staff Estimate									4.90	5.11						5.24								4.90	4.90				
Baa Corporates (Blue Chip + IHS Average)																**5.51**											5.11	5.11	

	ROE - Baa Utility Bonds V.I. Electric	ROE - Baa Utility Bonds Gas	ROE - Baa Corporates V.I. Electric	ROE - Baa Corporates Gas
Interest Rate Premium Applied: Simple Average Spreads				
Yield Spread: Baa Corporate - Baa Utility	(0.11)	(0.11)	(0.11)	(0.11)
Yield Spread: Baa Rated Utility - A Rated Utility	(0.29)	(0.29)		
Total Interest Rate Premium Applied	5.41	5.30	5.20	5.09	5.23	5.11
Derived ROE	**10.52**	**10.41**	**10.71**	**10.60**	**10.73**	**10.62**
Interest Rate Premium Applied: Weighted Average Spreads						
Yield Spread: Baa Corporate - Baa Utility	(0.11)	(0.11)	(0.11)	(0.11)		
Yield Spread: Baa Rated Utility - A Rated Utility	(0.29)	(0.29)				
Total Interest Rate Premium Applied	5.55	5.50	5.53	5.48	5.55	5.50
Derived ROE	**10.65**	**10.60**	**11.04**	**10.98**	**11.06**	**11.01**
Indicated ROE Range						
At Max Interest Rate Premium: January 2012 - June 2022	6.52	6.46	6.15	6.19	6.07	6.16
	5.41	5.30	5.20	5.09	5.23	5.11
Derived ROE	**11.94**	**11.76**	**11.35**	**11.29**	**11.30**	**11.27**
At Min Interest Rate Premium: January 2012 - June 2022	5.36	5.18	4.71	4.56	4.74	4.58
	5.41	5.30	5.20	5.09	5.23	5.11
Derived ROE	**10.78**	**10.48**	**9.92**	**9.65**	**9.97**	**9.69**
Indicated Risk Premium with ROE Range Sensitivity						
Indicated Spread (%)	4.39	4.50	4.60	4.71	4.57	4.69
Debt Security Yield	5.41	5.30	5.20	5.09	5.23	5.11
ROE Range Min: 9.80%	9.80	9.80	9.80	9.80	9.80	9.80
Indicated Spread (%)	4.59	4.70	4.80	4.91	4.77	4.89
Debt Security Yield	5.41	5.30	5.20	5.09	5.23	5.11
Point Estimate: 10.00%	10.00	10.00	10.00	10.00	10.00	10.00
Indicated Spread (%)	4.79	4.90	5.00	5.11	4.97	5.09
Debt Security Yield	5.41	5.30	5.20	5.09	5.23	5.11
ROE Range Max: 10.20%	10.20	10.20	10.20	10.20	10.20	10.20
Indicated Spread (%)	4.99	5.10	5.20	5.31	5.17	5.29
Debt Security Yield	5.41	5.30	5.20	5.09	5.23	5.11
ROE Range Max: 10.40%	10.40	10.40	10.40	10.40	10.40	10.40

SOURCES: S&P Capital IQ, IHS Markit, and Blue Chip Financial Forecast

Wisconsin Public Service Corporation
Test-Year Long-Term Debt Offerings and Yield Curve
As of June 30, 2022

WPSC Test-Year LTD Offerings					
Utility	Offerings	Issuance Date	Rate	Maturity	Duration
WPSC*	$225,000,000	June-22	4.10%	June-52	30 years
WPSC	$200,000,000	November-22	5.00%	November-52	30 years

Note - rate locked

			WPSC LTD Offering Spread	
Credit Class	Yield	Spread	Jun-22	November-22
AA Corporate	4.47%	0.43%	-0.37%	0.53%
A Corporate	4.90%	0.15%	-0.80%	0.10%
All Utilities	5.05%	-	-0.95%	-0.05%

WPSC Peer Utility Curently Approved ROE, Equity Layer, and WACC
As of June 30, 2022

WPSC Peer Combo Utilities						
Utility	**Jurisdiction**	**Utility**	**Current Rate Case**	**Approved ROE**	**Equity Layer**	**WACC**
Avista Corporation						
Alaska Electric Light & Power	Alaska	Electric	2017	11.95%	58.18%	8.91%
Avista Corp.	Idaho	Electric	2021	9.40%	50.00%	7.05%
Avista Corp.	Washington	Electric	2021	9.40%	48.50%	7.12%
Avista Corp.	Idaho	Gas	2021	9.40%	50.00%	7.05%
Avista Corp.	Oregon	Gas	2020	9.40%	50.00%	7.24%
Avista Corp.	Washington	Gas	2021	9.40%	48.50%	7.12%
Black Hills Corporation						
Black Hills Colorado Electric Inc	Colorado	Electric	2015	9.37%	52.39%	7.43%
Black Hills Power Inc **	South Dakota	Electric	2015			7.76%
Cheyenne Light Fuel & Power Co.	Wyoming	Electric	2014	9.90%	54.00%	7.98%
Black Hills Energy Arkansas Inc	Arkansas	Gas	2018	9.61%	40.43%	5.62%
Black Hills Colorado Electric Inc	Colorado	Gas	2021	9.20%	50.26%	6.56%
Black Hills Iowa Gas Utility Co.	Iowa	Gas	2021	9.60%	50.01%	6.75%
Black Hills Kansas Gas Utility Co.* **	Kansas	Gas	2021			
Black Hills Gas Distribution LLC	Nebraska	Gas	2012	9.60%	51.16%	7.67%
Black Hills Gas Distribution LLC	South Dakota	Gas	2019	9.40%	50.23%	6.98%
CMS Energy Corporation						
Consumers Energy Co.	Michigan	Electric	2021	9.90%	41.84%	5.62%
Consumers Energy Co. **	Michigan	Gas	2020	9.90%		
MGE Energy, Inc.						
Madison Gas and Electric **	Wiscosin	Electric	2021	9.80%	55.00%	7.18%
Madison Gas and Electric **	Wiscosin	Gas	2021	9.80%	55.00%	7.18%

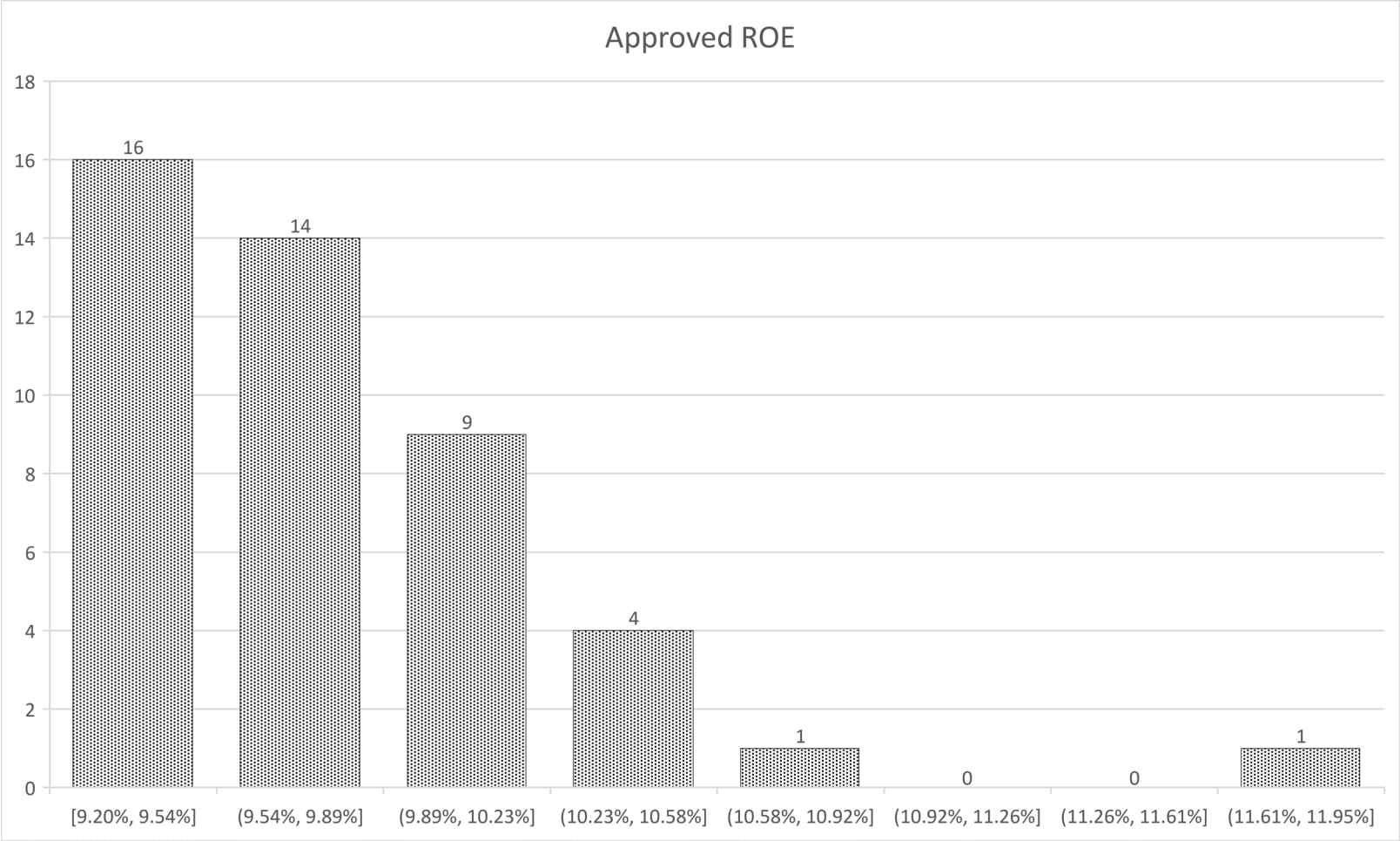
NiSource Inc.						
Northern Indiana Public Service Co.*	Indiana	Electric	2019	9.75%	47.86%	6.52%
Northern Indiana Public Service Co.*	Indiana	Gas	2018	9.85%	46.88%	6.50%
Columbia Gas of Kentucky Inc *	Kentucky	Gas	2021	9.35%	52.64%	6.89%
Columbia Gas of Maryland Inc *	Maryland	Gas	2021	9.65%	52.95%	7.06%
Columbia Gas of Ohio Inc	Ohio	Gas	2008	10.39%		8.12%
Columbia Gas of Pennsylvania Inc **	Pennsylvania	Gas	2021	9.86%		
Columbia Gas of Virginia Inc **	Virginia	Gas	2019			
NorthWestern Corporation						
NorthWestern Corporation	Montana	Electric	2019	9.65%	49.38%	6.92%
NorthWestern Corporation **	South Dakota	Electric	2015			7.24%
NorthWestern Corporation **	Montana	Gas	2017	9.55%	46.79%	6.96%
NorthWestern Corporation **	Nebraska	Gas	2007	10.40%		
NorthWestern Corporation **	South Dakota	Gas	2007			7.56%
Sempra						
San Diego Gas and Electric Co.	California	Electric	2019	10.20%	52.00%	7.55%
Oncor Electric Delivery Co.	Texas	Electric	2017	9.80%	42.50%	7.44%
San Diego Gas and Electric Co.	California	Gas	2019	10.20%	52.00%	7.55%
Souther California Gas Co.	California	Gas	2019	10.05%	52.00%	7.30%
The Southern Company						
Alabama Power Co.	Alabama	Electric	NA		53.00%	
Georgia Power Co.*	Georgia	Electric	2019	10.50%	56.00%	
Mississippi Power Co.*	Mississippi	Electric	2020		53.00%	7.57%
Atlanta Gas Light Co.	Georgia	Gas	2021	10.25%	56.00%	
Northern Illinois Gas Co.	Illinois	Gas	2021	9.75%	54.46%	6.96%
Chattanooga Gas Co.	Tennessee	Gas	2020	9.80%	49.23%	7.12%
Virginia Natural Gas Inc **	Virginia	Gas	2021	9.50%	51.89%	7.05%

Xcel Energy Inc						
Public Service Co. of Colorado **	Colorado	Electric	2022	9.30%	55.69%	6.82%
Northern States Power Co.	Minnesota	Electric	2021	9.20%	52.50%	7.08%
Northern States Power Co. **	North Dakota	Electric	2021	9.50%	52.50%	6.97%
Northern States Power Co. **	South Dakota	Electric	2014			7.22%
Northern States Power Co. **	Wisconsin	Electric	2021	10.00%	52.50%	7.31%
Southwestern Public Service Co. **	New Mexico	Electric	2021	9.35%	54.72%	7.07%
Southwestern Public Service Co. **	Texas	Electric	2020	9.45%	54.62%	7.13%
Public Service Co. of Colorado **	Colorado	Gas	2020	9.20%	55.62%	6.84%
Northern States Power Co. **	Minnesota	Gas	2010	10.09%	52.46%	8.28%
Northern States Power Co. **	North Dakota	Gas	2007	10.75%	51.59%	8.96%
Northern States Power Co. **	Wisconsin	Gas	2022	10.00%	52.50%	7.31%
			Min	**9.20%**	**40.43%**	**5.62%**
			Average	**9.79%**	**51.37%**	**7.21%**
			Max	**11.95%**	**58.18%**	**8.96%**
			Average Elec-only	9.80%	51.81%	7.23%
			Median Elec-only	9.70%	52.50%	7.18%
			Average Gas-only	9.78%	50.98%	7.19%
			Median Gas-only	9.75%	51.59%	7.09%

**Note - Jursidictions with limited-issue riders*

***Note - Settlement*

Source: S&P Capital IQ Pro and Investor Presentations.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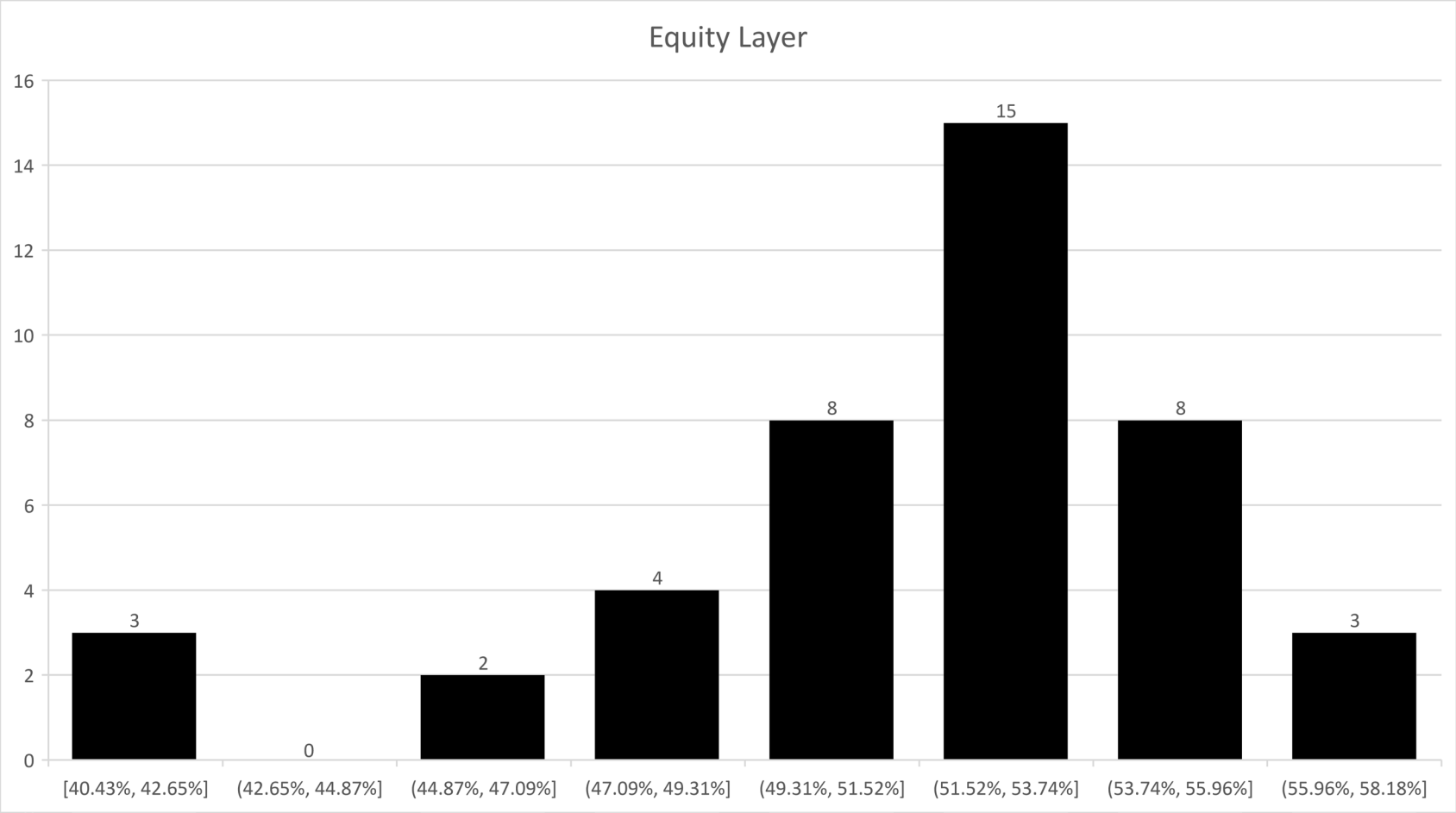
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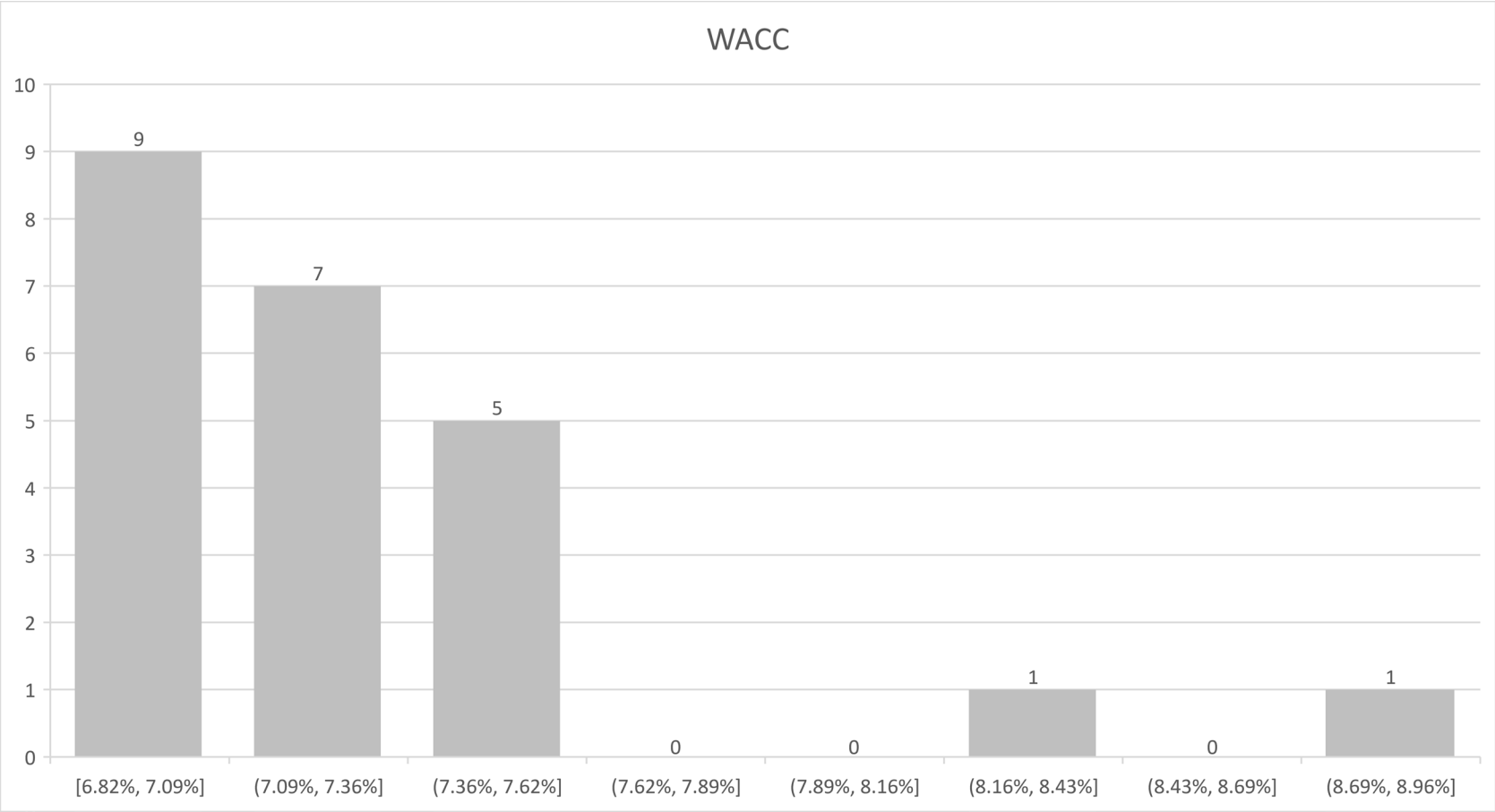
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